THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

COMPUTERWORLD

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E. F. Hutton to cut transmission costs with satellite network

Second in a four-part series on communications bypass strategies.

By Johnl Six
CW Staff

NEW YORK — E. F. Hutton & Co. is installing a bypass satellite communications network that will save the company $9.3 million over a seven-year period and pay for itself in roughly a year.

This diversified financial services company will use the satellite network provided by Equatorial Communications Co. of Mountain View, Calif., to broadcast information to its regional and branch offices and to update distributed data bases, according to Bernard A. Weinstein, E. F. Hutton's first vice-president of communications and branch information systems.

The data carried on the one-way network will provide branch offices with, among other things, current customer account information, product facts, technical research, news, market analyses and bond inventories, Weinstein said.

Roughly two-thirds of the broadcast traffic to be carried via satellite is currently transmitted over dial-up circuits; the balance is bundled into the company's interactive leased-line network. The benefits will be twofold: Using the Equatorial network will save money over dial-up connections, while "off-loading the broadcast traffic from the terrestrial network will help response time," Weinstein said.

That leased-line network costs E. F. Hutton $4.8 million each year and is used to interconnect a hierarchy of processors that includes the following:

■ A host complex with two IBM 3081 Model Ks at corporate headquarters and

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TOP OF THE NEWS

Highlights and lowlights. Although some bright spots have appeared in the computer industry, quarterly financial results continue to reflect turbulent times. Page 2.

■

Seeking stronger ties with the IBM world, DEC announced communications products including software that allows IBM micros to be used as Decnet nodes. Page 4.

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Sperry unwrapped a scientific processor for its 1100/90 series mainframes and added two entry-level machines to the series. Page 8.

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Seven software packages joined the ranks of the $100 million sales club at the annual International Computer Program's awards gala. Page 11.

■

Hostile takeover in the making? After Informatics rejected a takeover offer by Sterling Software, Sterling said it would continue with its plans and hired an investment firm to help. Page 97.

■

Software execs top pay survey

By John Desmond
CW Staff

WILLOW GROVE, Pa. — Managers of software systems programming are the highest paid DP employees in the U.S., while applications programming managers are a close second, according to a recent salary survey of 20 DP positions conducted by the Administrative Management Society.

The "Third Annual Data Processing Salaries Report," which surveyed 2,360 companies with 57,479 data processing employees in 114 U.S. and Canadian cities, revealed that systems programming managers in 1984 earned an average of $40,400 in the U.S., an increase of 5.8% over 1983 figures. Applications programming managers earned an average of $40,000, an increase of 3.4% over 1983.

Of U.S. DP employees, data base administrators earned the third highest average salary at $36,400, while lead programmer/analysts and computer operations managers averaged more than $35,000, and senior software systems programmers and systems analysts earned more than $30,000.

In Canada, a manager of applications programming was the highest paid DP employee, earning $42,500 ($31,335 in current U.S. dollars) annually, while managers of software systems programming earned $41,700, managers of computer op-

See REPORT page 4

IBM compatibles: They're making memories

NAS 7900 combines speed with data loss protection

By Jeffry Beeler
CW West Coast Bureau

MOUNTAIN VIEW, Calif. — National Advanced Systems Corp. last week announced an IBM-compatible external storage unit that reportedly combines the speed of semiconductor memory with the nonvolatility of magnetic disks.

NAS' 7900 Semiconductor Disk Subsystem, which holds from 32M bytes to 512M bytes, backs up solid-state memory circuitry with integrated 8-in. Winchester disk modules, according to Kenneth Page, the company's peripherals marketing director.

If the flow of electricity is suddenly interrupted, the external storage unit automatically activates a built-in battery pack, which can nourish the 7900's volatile semiconductor memory for up to 15 minutes, Page said. While the battery furnishes emergency back-up power, the storage unit's contents

See NAS page 6

Memorex counters IBM 3380 with high-density 3680

By Charles Babcock
CW New York Bureau

NEW YORK — Memorex Corp. last week unveiled its response to IBM's recently announced double-capacity 3380 disk drive and year-old 3480 cartridge tape unit.

Memorex introduced the following five products:

■ A double-deck configuration of the Memorex 3680 disk drive that is said to offer 10G bytes of storage and occupy roughly 45 square feet of computer room floor space.

■ A tape cache processor that Memorex claimed offers an alternative to users who do not want to migrate from the 10½-in. IBM 3420-type tape unit to IBM's newer 3480 cartridge model.

■ Two tape drive control units said to be replacements for IBM's 3803 tape controllers, commonly used with IBM 3420-type tape drives.

■ An eight-port communications con-

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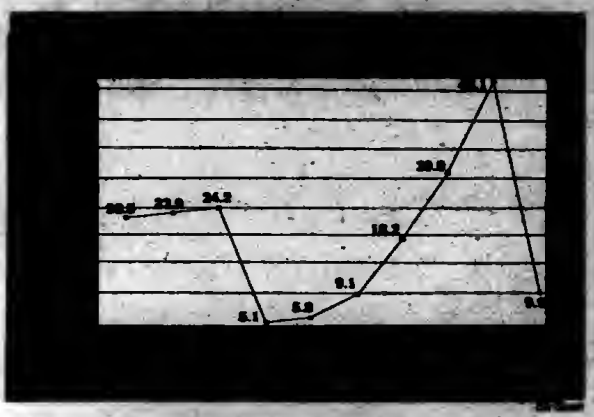
Quarterly financial results reflect turbulent industry



Vendors report varied profit, revenue gains

Financial results for the latest quarter continue to highlight the turbulent waters in which computer companies are operating, although reports of revenue gains and profits from Burroughs Corp., Honeywell, Inc., Amdahl Corp. and Apollo Computer, Inc. go against the tide of recent industrywide declines.

Meanwhile, Apple Computer, Inc. reported that second-quarter results were up from year-earlier levels but were well below the results posted in the company's record first quarter of 1985 and fourth quarter of 1984, and Gould, Inc. reported profits were off 19% with a 4% revenue decrease.

Storage Technology Corp. (STC), engaged in bankruptcy-court-supervised reorganization, reported a loss of $505.5 million in 1984, which included fourth-quarter write-offs of inventory and expenses related to the reorganization.

Burroughs posted profits of $46.6 million, or $1.03 per share, up 8.4% from $43 million, or 95 cents per share, in the first quarter a year earlier. Revenue was $1.16 billion, up 7.9% from $1.08 billion a year earlier; sales revenue was up 15.1%, however, while rental income declined by 17.7%.

Honeywell reported profits of $46.2 million, or $1 per share, up 16.7% from first-quarter 1984 profits of $39.6 million, or 86 cents per share. Revenue for the quarter was $1.48 billion, up 7.6% from $1.37 billion a year earlier. The company said growth in large-systems orders more than offset a significant decline in small-systems orders; it recently announced production halts and the elimination of some jobs at its Billerica, Mass.-based Small Computer and Office Systems Group [CW, April 15].

Plug-compatible mainframe vendor Amdahl reported first-quarter revenue of $177.5 million, up almost 2% from $174.5 million a year earlier. The company posted profits of $47.5 million, or 9 cents per share, compared with year-earlier profits of $46.1 million, or 9 cents per share.

Rounding out the positive results, Apollo doubled its profit of the first quarter a year ago, posting earnings of $8.8 million, or 25 cents per share. Sales revenue in the first quarter jumped to $82 million, compared with sales of $37 million the same quarter last year.

Apple, which earlier this year [CW, March 11] announced scheduled production halts to reduce inventories, said second-quarter revenue was $436.3 million, up 45% from $300.1 million in the second quarter of 1984. Profits were $9.5 million, or 16 cents per share, up 9% from year-earlier profits of $7.4 million, or 15 cents per share.

At the time, second-quarter 1984 results were considered disappointing, slumping from the first quarter of 1984, and second-quarter 1985 results were also well below Apple's performance over the previous six months. In the fourth quarter of 1984, Apple posted profits of $30.8 million on revenue of $477.4 million; in the first quarter of 1985, the company posted profits of $46.1 million on revenue of $668.3 million.

Gould said first-quarter revenue from continuing operations was $343.3 million, compared with $363.1 million a year earlier; profits were $18.1 million, or 41 cents per share, down from $20.9 million, or 46 cents per share.

STC, which last fall filed for protection under Chapter 11 of the U.S. Bankruptcy Act, reported 1984 revenue of $808.6 million, compared with $886.6 million in 1983. It posted a $505.5 million loss, or $14.62 per share, compared with 1983 losses of $40.9 million, or $1.19 per share.

STC's fourth-quarter results showed a loss of $419.2 million, or $12.13 per share, on revenue of $151.9 million; in the fourth quarter of 1984, STC showed a loss of $35.4 million, or $1.03 per share, on revenue of $236.9 million. The firm said it posted in the fourth quarter $279.7 million in nonrecurring expenses and inventory write-offs relating to divestiture and the reorganization.

Paradyne files opposing response to pending HHS ban

LARGO, Fla. — Paradyne Corp. has filed its response and opposition to the U.S. Department of Health and Human Services' (HHS) proposal to disbar the company from supplying equipment to the federal government.

In March, an HHS task force determined that Paradyne misrepresented the status and availability of data communications equipment in a $118 million contract with the Social Security Administration (SSA) [CW, March 18]. The SSA's "allegation was that we [had] described the product in the present tense, [but] we had not put it into production yet," said George B. Pressly, Paradyne senior vice-president. "They said that was a contradiction and we misled them."

In its response, Paradyne said that "all proposals and products are described in the present tense," Pressly said. "The only requirement was that we put together off-the-shelf components that were commercially available, and we did that. We conformed to the requirements of the [request for proposal]."

Asked whether the product was in fact available when shown to the SSA, Pressly said Paradyne "had done a lot of testing of the device, but it was actually put together and integrated at some point after that."

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CW at NCGA: The first commandment of a presentation graphics system is that it be useful . . . IBM introduced a Personal Computer XT model for financial institutions . . . Workstations on the desks of top executives can make information readily available . . . Intelligent, stand-alone workstations based on 32-bit technology highlighted the hardware offerings . . . The HP 9000 Series 500 gets a net, a display station and a server device/12-14

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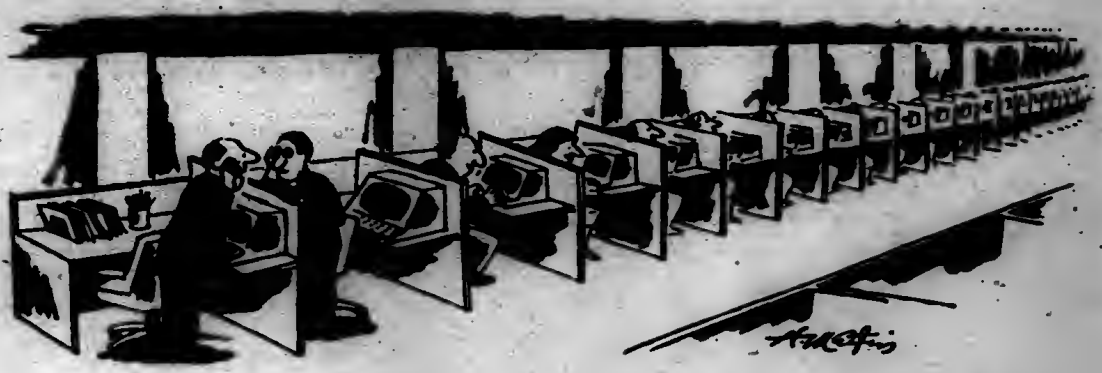

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CW 4/85/85

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DEC tools pump up integraton to IBM environments

By John Dix
CW Staff

TEWKSBURY, Mass. — Digital Equipment Corp. last week announced software products reportedly aimed at integrating DEC and IBM environments at the personal, departmental and corporate levels.

Products unveiled include software that enables IBM Personal Computers to be used as nodes in Decnet networks, software that facilitates the programming of DEC applications that need to cross into IBM domains and protocol emulators for DEC's family of multiuser Micro/PDP-11s, with which attached terminals can emulate IBM 3270-type terminals.

The announcements, which complement earlier products and commitments, were viewed by analysts as building blocks in DEC's communications strategy. "This is the centerpiece of DEC's internetwork strategy," said Kim Myhre, director of communications industry research at Framingham, Mass.-based International Data Corp. (IDC). "DEC wants to penetrate IBM accounts, and they need IBM compatibility to do that."

The introduction of Decnet-DOS comes on the heels of the Decnet-Rainbow communications software package announcement last month (CW, March 11). With Decnet-DOS, IBM Personal Computers and Personal Computer XTs can be integrated as end nodes in Decnet networks and communicate with other nodes, according to the company.

"Decnet-DOS gives high-horsepower network functions to the IBM Personal Computer," noted Eric Killorin, president of Hyatt Research Corp., a research firm in Andover, Mass.

The IBM processors are tied into Decnet through IBM's Asynchronous Communications Adapter, which provides an RS-232 interface at 9.6K bit/sec., using DEC's Digital Data Communications Message Protocol. A caveat is that the micros must be connected through a DEC minicomputer that acts as a network router. "This is a less expensive way to interface the personal computers to the network, but less functional," Killorin said.

Decnet-DOS is said to provide file transfer and remote data-access capabilities for sharing data across a network, remote resource access to shared peripherals, virtual disk capability to expand storage, task-to-task communications to develop distributed applications and network management for tracking the status of a network, DEC reported.

Slated to be available in September, Decnet-DOS will cost $600.

Software announcements

Three software packages were announced that are said to lessen the complexity of integrating DEC environments with IBM Systems Network Architecture (SNA) environments. IDC's Myhre said these products enable users to maximize DEC applications in other processing environments.

■ Decnet/SNA VMS Advanced Program-to-Program Communications/LU6.2 (APPC) Programming Interface. This package enables VMS-based applications on VAX and Microvax systems to communicate on a peer-to-peer basis with IBM host applications via the previously announced Decnet/SNA Gateway, the company said.

The APPC Programming Interface reportedly insulates programmers working in VMS environments from underlying SNA concerns, freeing them to concentrate on applications development. All Decnet/SNA interconnect functions are transparent to the programmer, the company said. Available in June, the product costs $2,500.

■ Decnet/SNA VMS Application Programming Interface (API). API is said to enable user-written applications running on VAX/VMS and Microvax/Micro VMS systems within Decnet to exchange files and data with IBM host applications. Also available in June, API costs $1,500.

■ Decnet/SNA VMS 3270 Data Stream Program Interface. This package enables user-written applications on VAX systems running VMS or Micro VMS to exchange messages with IBM 3270 applications. Designed like the APPC Programming Interface to insulate programmers from the inner workings of SNA, the program is said to send and receive 3270 data streams as defined by IBM. The product will be available in June for $2,500.

Finally, the Micro/RSX 2780/3780 and Micro/RSX 3271 Protocol Emulators are said to be layered software products for DEC's multiuser Micro/PDP-11 processors that provide support of IBM's Binary Synchronous Communications protocol in a batch or interactive manner.

The former product, available next month, costs $1,200. The Micro/RSX 3271, also available next month, costs $900.

REPORT from page 1

erations averaged $40,900, and data base administrators earned $39,500.

The lowest paid DP employees were data entry operators, who were paid $13,200 in the U.S. and $18,200 ($13,419 current U.S. dollars) in Canada.

Among the five U.S. regions included in the survey, the lowest salaries were reported in the West Central U.S., an area including Wisconsin, Minnesota and Kansas, where 11 of the 20 positions averaged the lowest salaries.

Highest salaries

The highest salaries were reported in the western U.S., including Washington, California, Oregon and western Texas, where nine of the 20 positions studied posted the highest salaries.

The highest paying industry for DP employees is utilities, which paid the top salary average in 17 of the 20 positions surveyed. The utility industry was followed by the manufacturing and processing sector in average pay. The top-position industry area, an applications programming manager working for a utility in the West, averaged $47,600.

Other businesses represented in the survey were banking and insurance, retail/wholesale sales and distribution, DP service bureaus and a composite group including government, education and medicine.

Raises based on merit

The AMS survey found raises are most often awarded on merit, with 78.8% of U.S. companies relying on that method. Less than 8% gave raises based on longevity, cost of living or equity.

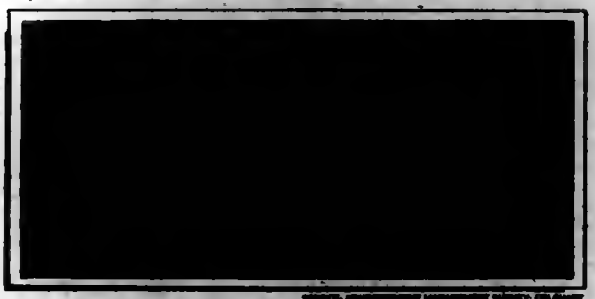
A workweek of 40 hours or more was reported by 68.6% of U.S. DP managers, only 1% of whom said they are union members.

Findings in the current survey were consistent with past findings. Last year, applications programming managers were the highest paid, with average salaries of $36,700. U.S. managers of software systems programming, with average salaries of $36,160, were the highest paid professionals in the 1983 survey.

Applications programming managers at the Los Angeles Water and Power Co., who fit the profile of the highest paid by industry and location, at $50,000 yearly earn more than the survey's top average, according to Dale Bennion, assistant MIS director at the utility.

"We get recruiters calling here two to three times a week asking for the names and phone numbers of these guys," Bennion said.

The 1985 salary survey is available for $55 for AMS members and $65 for nonmembers from AMS at 2300 Maryland Road, Willow Grove, Pa. 19090.



SOURCE: DATA PROCESSING MANAGEMENT ASSOC. ON CHART

Salaries of IEEE members up 15%

WASHINGTON, D.C. — The median annual income of members of the Institute of Electrical and Electronics Engineers, Inc. (IEEE) was $46,100 as of Feb. 1, according to a survey of 11,000 IEEE members in electrical and computer engineering, electronics and computer science professions.

The "1985 IEEE U.S. Membership Salary and Fringe Benefit Survey" revealed that the median annual income of IEEE professionals increased more than 15% over that of the previous year, while the U.S. Consumer Price Index increased 3%.

Individual salaries ranged from $28,900 to $72,000, and only 0.4% of the respondents reported being unemployed. Salaries increased commensurately with experience, with median incomes ranging from $28,000 with one year of experience to $66,000 with 30 years or more.

Electrical engineers in the San Francisco-Oakland, Calif., area earned the highest median income at $53,000.

The 136-page study, prepared by Abbott, Langer & Associates of Crete, Ill., under contract to the IEEE, is available for $29.95 for members and $49.95 for nonmembers before May 10. After that date, rates are $49.95 and $69.95, respectively. Inquiries can be sent to the IEEE Service Center, Publications Sales, 445 Hoes Lane, Piscataway, N.J. 08854.

— John Desmond

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SUSPENSE

How did IBM's rookie sort (Rel 7.0) do in its first meeting with "Lefty" SyncSort? Read all about it!

or Call (201) 568-9700.

Get the inside scouting report.

It is one of those historic moments in the Annals of Sort! The very first appearance in competition of IBM's new DFSORT, Release 7, in the tough-as-nails MVS/XA League. Will the kid be able to live up to his advance press notices?

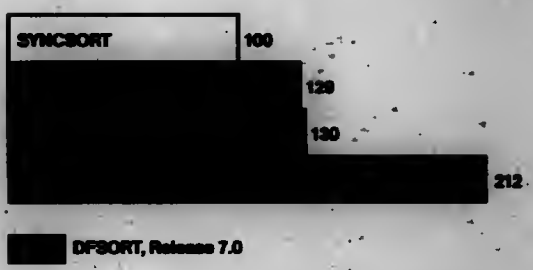
Confidently DFSORT7 strides to the plate... knocks the dirt out of his spikes... hitches up his britches... raises his sort assists.

Then, as sorting fans everywhere gasp in amazement, he lifts his arm lazily and points toward the centerfield flagpole, thousands of bytes away. The kid is going to try to emulate Babe's mighty homerun shot!

Moments later, SyncSort winds up... a curving white blur is seen... and... and...

There is no joy in Armonk! DFSORT7 struck out every time it came to bat against the latest release of SyncSort (Release 2.SE) in a recent series of MVS benchmark tests. (In sorting, as in most other forms of human endeavor, it's a long way from *baby* to *Babe*.)

The bar charts below tell the story more eloquently than we can:



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NEWS

MEMOREX from page 1

troller, reportedly a low-end alternative to the 16- and 32-port communications controllers offered by IBM.

■ An enhanced version of Memorex's 2078 CRT terminal, called the 2080.

The 3680 High Density Package (HDP) uses eight single-density head disk assemblies with thin-film read/write heads to provide 10G bytes of storage within a 26-sq-ft footprint. It is 82 in. high, compared with the 50-in. standard 3680 disk drive. With service clearances, front and rear, the 3680 HDP requires 44.5 sq ft of floor space, company spokesmen said.

Each of the eight head disk assemblies in the 3680 HDP has two actuators, each capable of independently addressing half, or 630M bytes, of the total physical module. This, Memorex said, prevents a decrease in performance compared with the original single HDA 3680.

In addition to thin-film read/write heads, the 3680 HDP uses 4mm-thick substrate media, independent microprocessors for each actuator and an additional microprocessor for diagnostics and monitoring.

Although Memorex is touting the 3680 HDP as its response to IBM's dual-density 3380s, Memorex officials said last week that the company still hopes to unveil a double-density version of the 3680 at an unspecified date.

The purchase price of the 3680 HDP is $310,310, with shipments to begin in the third quarter, spokesmen said.

Memorex also announced a 3520 tape cache processor, an intelligent I/O device that can exchange information with IBM mainframes at channel speeds of 3M byte/sec., while allowing users to retain the slower Memorex 3420-type tape drives, which offer a 1.25M byte/sec. data transfer rate.

The 3520 is built by Intellistor of Longmont, Colo., a manufacturer of solid-state storage devices that is serving as an OEM to Memorex. The purchase price for a one-module configuration of the 3520 is $85,000. A two-module version costs $170,000. Both units will be available in the fourth quarter, the company said.

In addition to the tape cache processor, Memorex also bolstered support for IBM 3420-type tape units with two tape control units: the 3201 single magnetic tape controller and a 3202 dual tape controller. Each unit features its own power supply.

Made for Memorex by Fujitsu Ltd., the tape control units are compatible with IBM 370, 3033, 3080 and 4300 processors, spokesmen said.

The 3201/3202 models reportedly are also able to serve both the Memorex 3220 line and its smaller 3265, 3266 and 3288 tape drives.

The 3201/3202 microprocessor controls transfer of data at 1.25M byte/sec., and each cabinet has a floor space requirement of 5.63 sq ft. Two 3202 units (or four control units) can work in unison, allowing a maximum of eight CPUs to operate with up to 16 tape drives.

The Memorex controllers also are said to offer fault-tolerant capabilities. For example, if one controller in a maximum configuration becomes inoperative, the remaining three will be able to support all 16 drives.

The 3201 and 3202 controllers will be available in June and cost $41,290 and $62,780, respectively.

An eight-port remote cluster controller, the 2174-8, operates within IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) communications protocol. Manufactured by McData Corp. of Boulder, Colo., the unit is compatible with the IBM 3274-51C cluster controller and can control communications to IBM 370, 3033, 3080 and 4300 series hosts. Available immediately, it costs $5,595 for a single unit, spokesmen said.

The 2080 display station was also announced for bisynchronous or SNA/SDLC 3270 environments. It can connect to a Memorex or IBM controller via a Category A interface and communicates with IBM's 360, 370, 3033, 3080, 4300 and 8100 processors. Its tilt screen rotates 360 degrees. Available in 30 days, it costs $1,995, spokesmen said.

Memorex is a subsidiary of Burroughs Corp., San Tomas at Central Expwy., Santa Clara, Calif. 95052.

NAS from page 1

are dumped from random-access memory (RAM) to disks. After the 7900's primary power source is restored, the data is reloaded from nonvolatile disk to the subsystem's semiconductor memory, which uses 256K-bit RAM chips with 0.3-msec access times, according to Page.

Transfer rate

A fully configured 7900 subsystem transfers an aggregate of 12M byte/sec. and can be expanded to hold up to 512M bytes, he said.

Part of NAS' Alliance generation of products, the external storage subsystem consists of three main components — a controller, storage unit and battery backup unit.

The Model 7970 controller contains two storage directors, an equal number of 3M byte/sec. data paths and a choice of two- or four-channel switches.

With an optional "quad-porting" capability, a 7900 can reportedly be upgraded to hold a second controller, for a total of four data paths into the subsystem.

In addition to the two controllers, a fully configured system can incorporate up to four Model 7990 storage units, each ranging in capacity from 32M to 128M bytes. When equipped with both the quad-port option and the four-channel switch, the storage units can support a total of up to 16 data paths and can allow 7900 users shared access to as many as eight CPUs, Page said.

Floor space requirements

Both the 7970 controller and 7990 storage unit reportedly occupy 1,024 square inches of floor space per unit, compared with 576 square inches of space for the Model 7995 battery backup unit.

Depending on the configuration, the 7900 emulates IBM's 3330, 3350 and 3380 disk systems or their NAS equivalents.

A typical 7900 configuration with a controller, one 128M-byte storage unit and battery backup costs $498,000, according to the vendor. Shipments of the subsystem begin in August.

More information is available from NAS, which is located at 800 E. Middlefield Road, Mountain View, Calif. 94040.

STC from page 1

pacity 3380 disk drives, 5.04G bytes, and will cost roughly 71% more than STC's single-capacity 8380 models offering 2.5G bytes of storage. For example, a single-capacity 2.5G-byte 8380 Model B4 currently costs $63,150; a dual-capacity model would cost roughly $107,966.

Current users of the 8380 will reportedly be able to field-upgrade to the dual-capacity models by swapping the unit's single-capacity head disk assembly with a dual-capacity head disk assembly. Current users of IBM 3380 disk drives cannot upgrade to the dual-capacity 3380s.

When it announced the dual-capacity 3380 in February, IBM also announced two 2.5G-byte disk drives, the Models AD4 and BD4 [CW, Feb. 13]. Only those models are field upgradable to the 5.04G-byte, dual-capacity models. That upgrade will be available in the fourth quarter.

Because STC's dual-capacity upgrades may not be available until mid-1986, the company may have trouble making a significant dent in IBM's installed base of 3380s. IBM reportedly told industry analysts at a recent seminar in Poughkeepsie, N.Y., that since March 1, it has shipped roughly 6,000 spindles, or 3,000 units, of its single-capacity 3380 drives (Models AD4 and BD4).

— Tom Henkel

Logic bombs a 'people problem'

By Kathleen Sullivan
CW West Coast Bureau

LOS ANGELES — In the annals of computer crime, there are only a handful of cases involving saboteurs who planted logic bombs in computer systems. Among the 1,500 sabotage cases recorded since 1958, no more than five or six were associated with logic bombs, said Donn Parker, a computer security consultant at SRI International, Inc., a Menlo Park, Calif.-based research firm.

In early March, the Los Angeles Department of Water and Power joined this elite group of computer crime victims when its central computer was paralyzed for five days by a logic bomb [CW, April 16].

Parker noted that the statistics on logic bombs may be misleading, since firms are reluctant to call attention to such incidents. "Among the known cases, logic bombs are not very common, but they are also the kinds of cases that are not ever reported."

Logic bombs — software programs designed to destroy, remove or rearrange information in a computer at a given time — are usually placed by employees who have the skill, knowledge and access necessary to plant the bomb, he said.

"It's . . . not a technological problem, even though its manifestation is technological," Parker said. "This is a 'people problem,' so attention must be turned to human controls.

"It is not opportunity that motivates people to plant a logic bomb; it is the presence of intense personal problems," Parker said.

To deal with the problem, Parker suggested the following:

■ Develop an intelligence network within the organization to identify unhappy employees.

■ Train on-line managers to be more sensitive to employees' personal problems.

■ Offer employees access to confidential counseling services to help them deal with emotional problems.

■ Garner employee support for computer security policies by including it as an item in performance and salary reviews.

■ Develop a code of conduct and make sure that each employee signs the document once a year.

■ Limit physical access to the computer.

■ Maintain dual control over sensitive functions.

■ Implement good logging procedures so that a computer security manager will be able to track who performed certain functions on the system. Analyze the log's contents regularly for deviations.

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Storage announcements underscore vendor strategies

By Tom Henkel
CW Staff

An interim step for Memorex Corp., another open door for Fujitsu Ltd. and a new niche marked for National Advanced Systems Corp. (NAS) was how industry watchers viewed a series of IBM-compatible storage products announced last week.

The three most significant products announced by Memorex appeared to be an admission that the Burroughs Corp. subsidiary is not ready to counter IBM's recently announced dual-capacity 3380 disk drives and year-old 3480 cartridge tape unit.

Memorex unveiled the 3680 High-Density Package (HDP) disk subsystem, capable of storing up to 10G bytes of data in roughly the same computer room floor space as similarly configured dual-capacity IBM 3380 disk drives. The 3680 HDP reportedly occupies 40% less floor space than than the older single-capacity 3380s available from IBM.

"It's a gap filler," noted Raymond C. Freeman Jr., president of Freeman Associates, Inc. in Santa Barbara, Calif. He added that Memorex does not want to lose its current footing in the IBM-compatible marketplace and must therefore maintain at least the appearance of parity with IBM.

Freeman made it clear that he does not view the 3680 HDP as Memorex's final answer to IBM's dual-capacity 3380s. He expects Memorex will eventually announce a disk drive similar to the dual-capacity 3380.

If Memorex does unveil a dual-capacity 3380-type product, it will probably mean the end of the 3680 HDP. Neither Freeman nor E. F. Hutton & Co. analyst Michael Geran viewed the 3680 HDP as a long-term strategic product for Memorex. However, both admitted that the unit may be an attractive option to Memorex users who must expand disk capacity and have floor space restrictions.

As with the 3680 HDP, both Freeman and Geran viewed Memorex's tape cache processor and tape control units announced last week as an admission that Memorex is unable to develop a direct response to IBM's 3480 tape drive anytime soon.

By taking the interim step of bolstering its support for its IBM 3420-type tape units, Memorex may be able to accomplish two things: it could strengthen its position in the IBM 3420 disk drive marketplace by offering additional products to IBM users who are not prepared to buy 3480s; and by offering the tape cache processor, it can offer some of the features of the 3480 and improve its marketing position vis-a-vis IBM.

Memorex broadens Fujitsu ties

An aspect of the Memorex announcement that may not have a major impact until several months down the road is the company's broadened relationship with Japanese hardware manufacturer Fujitsu. Last week, Memorex announced two tape control units based on Fujitsu units.

Memorex's increased dependence on Fujitsu implies that Memorex will probably turn to Fujitsu as a supplier of a 3480-type tape unit, E. F. Hutton's Geran noted. If this turns out to be the case, Fujitsu may run into some problems supplying the same unit to Amdahl Corp., a longtime domestic remarketer of Fujitsu products and a company the Japanese firm half owns.

While Memorex was trying to keep up with IBM, NAS jumped into a marketplace heretofore dominated by Memorex and Storage Technology Corp. (STC) NAS unveiled a solid-state external memory subsystem for IBM and NAS mainframes that features a battery-powered disk backup.

The idea of solid-state memory subsystems is not new. STC first offered such a device to IBM mainframe users in 1979, when it announced the 4305. Memorex followed suit with the 3864 in 1983. The units were designed as high-speed random-access memory (RAM) external storage for applications requiring swapping and paging. The high cost of the units has limited the demand for solid-state memory to specialized applications, Freeman noted.

But with the increasing overall cost of mainframe computer systems and spiraling user demands for system resources, more users appear to be able to justify the price for solid-state external storage, Spokesmen for both Memorex and STC said the demand for their solid-state devices has been steadily increasing. Memorex's 3864 product manager, Harold Stanley, noted that in the past month Memorex has received twice as many orders for the 3805 than normal.

The NAS 7900 offers two advantages over the older 4305 and 3864. The 7900 uses 256K-bit RAM chips vs. 64K-bit chips in the 4305 and 3864, and it includes a battery-powered disk drive to store information in the event of a power failure. The others contain only volatile RAM, which means that if the power is lost, so is the data in the solid-state external storage device.

David Vellante, an analyst with Framingham, Mass.-based International Data Corp., noted that STC and Memorex could easily add a drive to back up their solid-state external memory devices as well. Both will also probably offer versions of their devices with 256K-bit memory chips.

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Sperry introduces scientific multiprocessing system

Operates with 1100/90 CPUs for high-speed computations

By Dennie Redmond
CW Staff

BLUE BELL, Pa. — In a trio of announcements last week, Sperry Corp. unwrapped a scientific processor capable of supporting both high-speed vector and scalar computations and introduced two entry-level 1100/90 mainframes and announced sweeping price cuts on its entire 1100/90 processor line and related products (see story below).

The Integrated Scientific Processor (ISP) is said to operate with the company's 1100/90 series mainframes as a tightly coupled multiprocessor. The ISP functions can be added to a user's existing Sperry 1100/90 series machine or purchased complete with the 1100/90 computers, the vendor said. The ISP reportedly is capable of supporting both high-speed vector and scalar computations.

The basic ISP system includes a Sperry 1100/90 CPU, an ISP, an I/O unit, an instruction processor cooling unit and a 36-bit-word scientific processor storage unit that is shared by the 1100/90 CPU, the I/O unit and the ISP.

The price of the system is approximately $3.5 million as an enhancement to an existing 1100/90 processor, with volume shipments slated between April 1986 and June 1986, the vendor said.

The basic 1100/90 machine costs approximately $2.4 million, the vendor added.

ISP's target areas

The ISP was designed for use in areas that include physical systems simulation, structural analysis, reservoir modeling and seismic processing, the vendor said. The system executes under the Sperry OS 1100 operating system.

The ISP shares residence in the host Sperry 1100/90 CPU and accesses its job queue and data directly from memory without crossing a channel interface, Sperry said. The 1100/90's main memory is replaced by high-speed memory that is essentially the same as the 1100/90's but that is said to be twice as fast. Users with 1100/91 machines can add the high-speed storage to existing memory, the vendor said.

Peak performance of a single ISP is said to be 133 millions of floating-point operations per second (Mflops) in single precision (36-bit words) and 67 Mflops in double precision (72-bit words). Average performance of the ISP is said to be in the 20- to 30-Mflop range for single precision and twice that for double precision, the vendor said. Instruction sets for both single and double precision are included.

Two ISPs can be connected into a single 1100/90 host system. The memory supporting the ISP is capable of transferring data to the processor at 133 million words per second for single precision or 67 million words per second for double precision.

The ISP is said to perform six to nine times faster than a Sperry 1100/90 in a scientific environment. Livermore loops and other benchmark tests qualify the ISP system for the Class VI supercomputer category, the vendor claimed.

The configuration of the ISP reportedly allows system performance to be tailored so that more general processing, more I/O processing or more scientific vector processing is possible. The system can be expanded to the maximum configuration of four 1100/90 CPUs, two ISPs, four I/O units and as much as 64M bytes of storage.

Included with the software for the machine is a Fortran 77 compiler with extended vector syntax, an automatic vectorization facility that permits Fortran source maintenance in Ansi Fortran syntax and tools for performance measurement, interactive debugging and simulation software support. All program development software developed for the 1100/90 is supported in the ISP environment, the vendor said.

Sperry joins National Advanced Systems, Inc., Amdahl Corp. and Honeywell, Inc., each of which has announced specialized processors or processor attachments aimed at scientific users in the past six months.

More information can be obtained from Sperry, which can be reached through P.O. Box 500, Blue Bell, Pa. 19424.

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Encore unveils first products

HANNOVER, West Germany — Nearly two years after its founding, Encore Computer Corp. introduced its first two products — a high-resolution interactive display station and a software development environment — here last week at the Hannover Faire.

The Hoststation 100 can access up to three hosts and display data in three Hostwindows simultaneously, Encore said. The windows can support Digital Equipment Corp. VT100, Tektronix, Inc. 4010 and 4014 and the Remote Graphics Instruction Set protocols.

The Hoststation's 19-in. noninterleaved monochrome monitor provides 1,066- by 864-pixel resolution, the company said. Priced at $3,495, the system is shipping now.

Encore's Ally environment, designed to automate routine software development tasks, reportedly will run on any operating system and file access method. Any Ally-written application will run without recompilation on any machine equipped with Ally, the firm said. An Application Development Dialog can be used by nonprogrammers and developers.

Ally, available now, will range in price from $100,000 for a development license on a large mainframe to $200 for a runtime license on a personal computer, Encore said.

The supplier called the products the first in the Encore continuum, "a framework for integrating computers, programs and methods of access."

More information is available from Encore at 15 Walnut St., Wellesley Hills, Mass. 02181.

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In short, System W is a mature, well-rounded product supported by years of experience in the decision support field and by a company whose reputation is above reproach. Therefore, without hesitation, we would recommend that anyone in the market for a state-of-the-art decision support system not overlook System W in their evaluation.

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BYPASS from page 1

an IBM 3081 Model Q at an alternate site that can be used for disaster recovery.

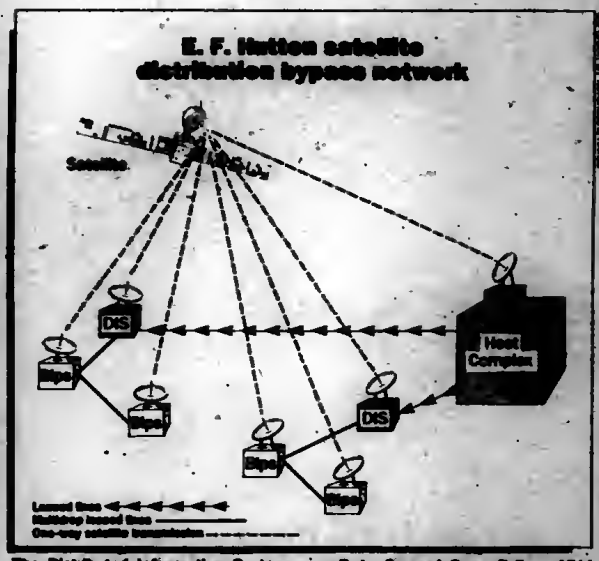
■ A mix of 40 Data General Corp. Eclipse MV/4000s, MV/8000s and MV/10000s that makes up DG's Distributed Information Systems (DIS) as used at E. F. Hutton regional centers.

■ Four hundred DG MV/4000s that are being installed in branch offices as Branch Information Processing Systems (Bips).

The 40 regional DIS systems, which are tied into the host complex with point-to-point leased lines, act as distributed data bases as well as communications concentrators for up to 20 surrounding branch offices, Weinstein said. Branch offices with Bips systems, roughly 100 of which have been installed, are supported with multidrop leased lines. When completed, the system will reportedly have in excess of 10,000 terminals.

Because all of the systems are integrated into the same architecture, "an inquiry from a broker can be served locally by a Bips computer at the regional level or at the host level," Weinstein explained. This also provides for the isolation of failed processors.

"If you lose a processor, its load is handled at the next level up," he said. "If we lost a regional DIS system, that inquiry would be serviced by the host. The host replicates all the data bases." The switch around failed nodes is done manually at the site.



The Distributed Information Systems are Data General Corp. Eclipse MV/4000s, MV/8000s or MV/10000s. The Branch Information Processing Systems are DG MV/4000s.

The leased-line network is typically used to place orders originating from branch offices with a stock exchange, transmit data regarding confirmation of trades, collect information used to update central records, and support interactive inquiry/response applications. It does not make sense to use the leased-line network, which was designed to carry high-speed traffic for short periods of time, to do updating, Weinstein said. That update traffic is now destined for the satellite network.

Installation of the roughly $1.25 million Equatorial system was started this year and is slated to be complete before year's end.

When finished, a single transmission will be able to update every distributed computer by beaming the signal from an antenna on top of E. F. Hutton's headquarters here up to a satellite and down to all the remote locations simultaneously.

A $2,500, 24-in. receive-only satellite dish antenna will be installed at each of 400 E. F. Hutton sites, providing 19.2K bit/sec. worth of bandwidth to every office. C-band satellite technology is used in this system because with it one does not have to worry about atmospheric interference, Weinstein noted. He also said that broadcasting data out of New York in the C-band frequency — which can interfere with terrestrial microwave, particularly in cities — is not a problem.

While the system can easily be cost-justified as a replacement for dial-up circuits used to broadcast one-way traffic such as reports and research needed by brokers in the field, other applications might accelerate the payback.

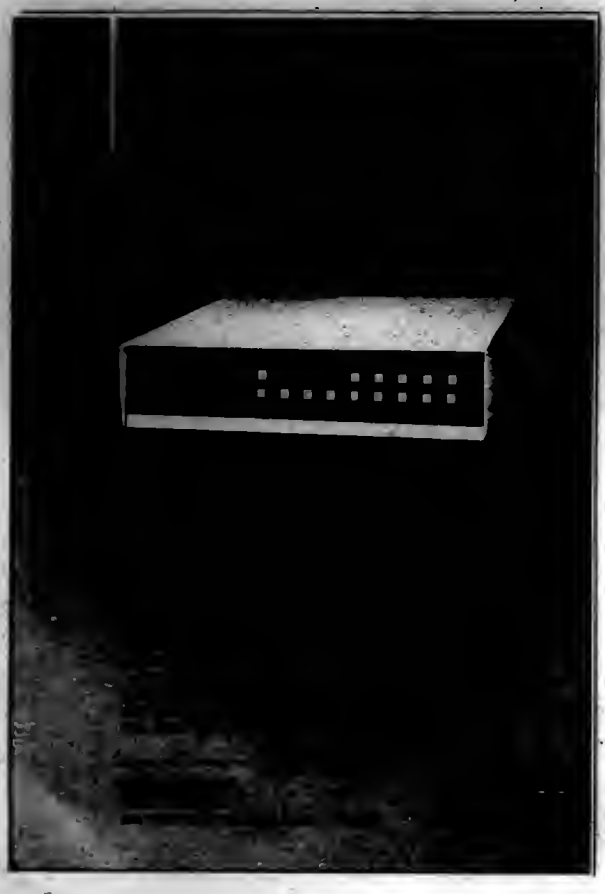
Weinstein said E. F. Hutton is building its own ticker plant to take stock, bond and commodity ticker feeds from the various exchanges, process them and then beam them out to branch offices.

Additionally, the network may be used to replace what is known on Wall Street as the "Hoot and Holler" system.

"Hoot and Holler" is a type of nationally broadcast audio show of opinions on financial markets, providing such features as a morning market comment. It is currently carried on an AT&T service called 881, which is essentially a terrestrial intercom line, Weinstein said.

Experiments to see if the Equatorial system can be used to replace the 881 service have proved very promising, Weinstein claimed. E. F. Hutton is spending in excess of $1.5 million a year on the 881 system today.

"We would save nearly the whole amount using the Equatorial system in its place," he noted, pointing out that these savings alone would more than pay for the Equatorial system.



Syncsort files claim against IBM

NEW YORK — Syncsort, Inc. has filed a complaint with the Federal Trade Commission charging that IBM misrepresented a new sorting utility hardware and software product.

The Englewood Cliffs, N.J., firm filed the complaint April 15 after it conducted tests that placed IBM's DFSort Release 7 against its predecessor, DFSort Release 6. Syncsort claimed the tests indicated that hardware improvements to the IBM 370/XA, designated "Sorting Assists" in a Feb. 5 announcement of Release 7, offered no performance improvement over Release 6.

Syncsort is IBM's major competitor for the sorting utility program sales, according to figures from International Data Corp., a Framingham, Mass., market research firm.

IBM spokesman in Rye Brook, N.Y., said Syncsort had brought its claims to IBM's attention but filed the complaint before IBM could respond.

Syncsort President Aso Tavitian said Syncsort did not want sorting customers "to fall for the romantic allure of Sorting Assists" if they offered no improvement in performance over other sorting packages.

AT&T $1.9 billion transfer OKed

WASHINGTON, D.C. — The Federal Communications Commission last week approved AT&T's request to transfer $1.9 billion in facilities and equipment from AT&T Technologies to AT&T Information Systems.

The decision confirms the FCC's recent direction in easing the separation conditions of the Second Computer Inquiry decision, which bars sharing resources between the unregulated AT&T Information Systems and the Technologies division.

Comments about, but not opposition to, the waiver requests AT&T filed in February [CW, Feb. 18] were filed with the FCC by equipment manufacturers concerned that network and customer proprietary information would be disclosed to AT&T Information Systems. The FCC said it was satisfied that AT&T would follow specific guidelines on improper disclosure of information.

ICP gives awards to top-selling software tools

SCOTTSDALE, Ariz. — The software industry staged its own version of Hollywood's Academy Awards ceremony last week, and seven software packages walked off with International Computer Programs, Inc.'s (ICP) prestigious $100 Million Award.

The seven packages, which were recognized for achieving at least $100 million in aggregate sales, were among the more than 270 software products honored at the 14th Annual ICP Million Dollar Awards and Executives Conference held here.

The awards are presented to the vendors of packages that have achieved various sales milestones since the product's introduction — beginning at the $1 million sales mark and extending to $250 million or more.

This year's $100 Million Award winners joined only nine other products that have garnered that distinction since the ICP awards were instituted in 1972.

Management Science America, Inc.'s (MSA) payroll system became the third MSA product to earn the $100 Million Award. It joined MSA's general ledger and human resource systems in that elite club.

Other $100 Million Award winners honored last week included the following: Applied Data Research, Inc.'s (ADR) ADR/The Librarian source program management system; Execucom Systems Corp.'s Interactive Financial Planning System decision support system; Information Builders, Inc.'s Focus fourth-generation language; McCormack & Dodge Corp.'s G/L:Millenium general ledger system; Software International Corp.'s General Ledger and Financial Reporting System; and Syncsort, Inc.'s Syncsort sort/merge utility.

Despite the widening of the ranks of $100 Million Award winners, no product this year garnered ICP's rarefied $250 Million Award, which has only been bestowed on one product — Cincom Systems, Inc.'s Total data base management system — to date. Cincom earned that award in 1982.

A total of 15 products entered the ranks of ICP's $50 Million Award winners. Included among these winners were MSA's accounts payable system, Cincom's Total Information System, ADR's Datacom/DB and two products each from Computer Associates International, Inc. and Ucosl Corp. Earning the award for Computer Associates were the CA-Dynam Family for DOS and CA-Optimizer MVS packages and for Ucosl, the UCC-1 and UCC-7 packages.

Computer Associates also walked away with three of the 22 $25 Million Awards handed out at the ceremony. Among other $25 Million Award winners were three McCormack & Dodge packages and two products from American Software, Inc. Computer Associates also garnered four $10 Million Awards, which were given to 31 packages this year.

Two packages each from American Management Systems, Inc., American Software, ADR, Data Design Associates and MSA also received $10 Million Awards. ICP also recognized more than 60 winners of the $1 Million Award.

Thirty-six software products won ICP's Million-in-One Award, which recognizes products that have achieved $1 million or more in sales in their first year of release. Cincom's Mantext and Net/Master products both earned the award, as did Distribution Management Systems, Inc.'s DMS-100 IBM Distribution System and DMS-2500 Distribution and Warehouse System packages.

In addition to recognizing software products and vendors, ICP handed out more than 215 Super Software Seller Awards to sales representatives who sold $1 million or more of software products in 1984.

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Indispensibility tops graphics systems requirements

SIGGRAPH/NCGA

By Edward Warner
CW Staff

DALLAS — There are seven commandments when it comes to implementing a corporatewide presentation graphics system, and the first is that the system be truly useful.

So said systems analyst Mark L. Borgmann of New England Telephone Co., who made his remarks in a panel presentation at the National Computer Graphics Association's (NCGA) conference here last week.

Borgmann told his audience to make whatever graphics system they establish indispensible. "Make it part of your business environment."

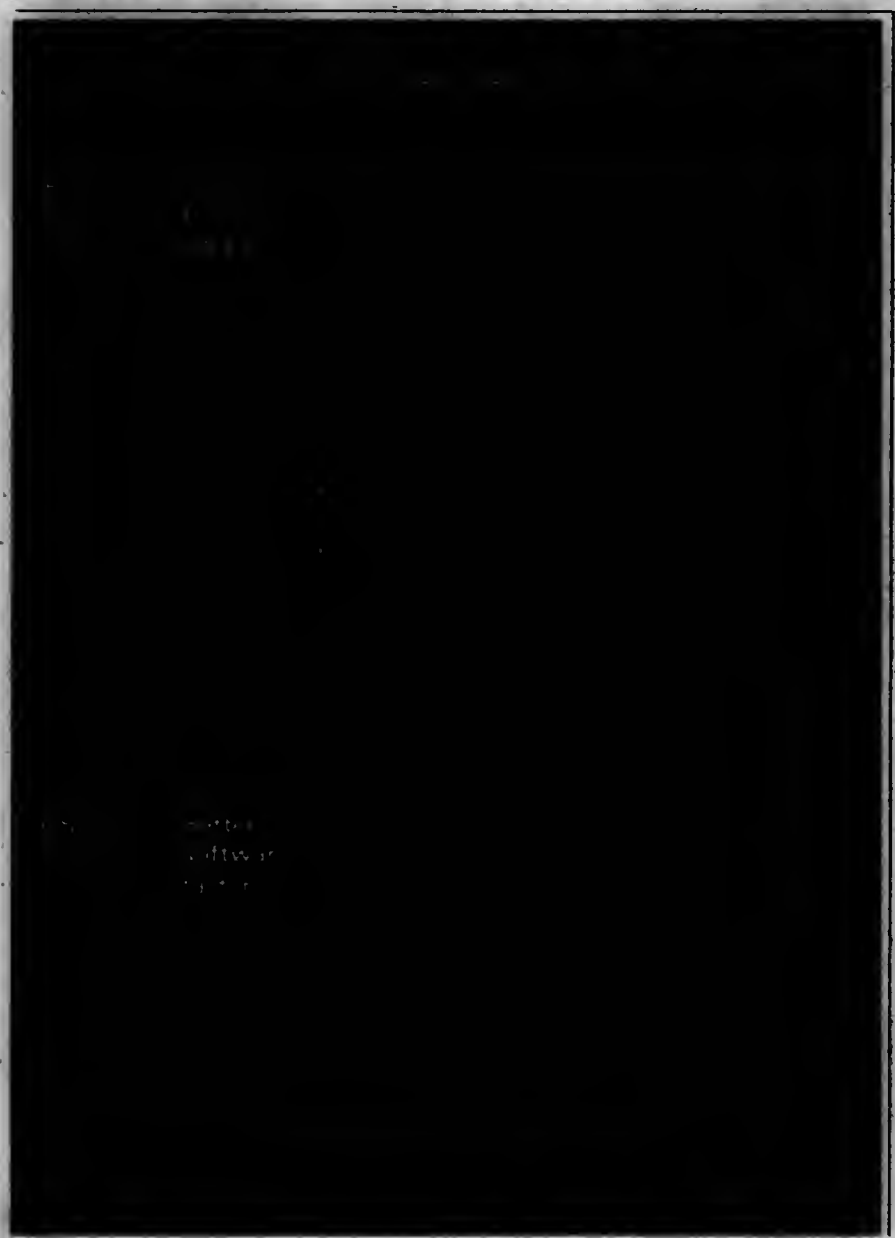
The second commandment said Borgmann, who is the graphics specialist at his firm, is that system developers must know the prospective users' needs and requirements for output quality. After such a needs assessment, he said, those who implement the system will have a better idea of the mainframe graphics package to buy, whether additional terminals will be needed and, most important, what information users will want to pull from the corporate data base for charting.

The other requirements for a successful graphics system implementation, he noted, are the following:

- Never make a promise that you cannot keep. Users cannot afford to have the system down when they are in a rush.
- Balance product, price and performance. "It's got to be worth what you're going to charge for the service."
- Set up high-payoff applications. "They are going to get you visibility."
- Do internal marketing — but only after the system is in place.
- Establish the proper support mechanisms once it is up and running. All output devices require maintenance, and the high-volume machines require it most of all, he warned.

To find a high-payoff use for graphics, Borgmann said, those who implement systems need to look no further than the desktops of corporate decision makers who need the quick briefing on data that a chart can provide. Because of their authority, though, Borgmann advised that chief officers not be the beta testers for a new graphics system.

The executive who has charge of approving the system's purchase will want to hear a cost-justification of it, Borgmann warned. When that critical moment arrives, he said, the proposal's defenders should not turn to a hard-dollar justification for graphics. Instead of claiming that such a system will save on outside production costs, proponents should emphasize the "soft dollar" benefits from such advantages as improved understanding of corporate data.



IBM rolls out XT version

RYE BROOK, N.Y. — IBM last week launched the IBM 4700 Personal Computer, a version of the Personal Computer XT designed for use in financial institutions.

The machine, available in May, acts as a workstation for the IBM 4700 Finance Communications System (FCS), a family of display stations, printers, controllers and programs. The 4700 Personal Computer can reportedly combine data from stand-alone personal computer programs with 4700 FCS applications.

The workstation features a 107-key financial keyboard and can work with keypads for entering personal identification numbers, magnetic stripe readers and other devices in the 4700 FCS family, IBM said.

A system unit with 256K bytes of internal memory will cost $3,065. A configuration with color display and keyboard will cost $3,960.

A $625 output option, available in May, allows the 4700 Personal Computer to attach to a 4700 financial printer. A $550 security option that encrypts and decrypts data is scheduled for September delivery. Both of these add-ons also work with the Personal Computer and Personal Computer XT. A $650 input option permits those machines to accept FCS keyboards and other input devices.

Additionally, IBM announced two financial programs for the 4700 Personal Computer, Personal Computer and Personal Computer XT. Both packages are scheduled for September availability.

The $300 IBM 4700 Personal Computer Application Services program permits transfer of data to and from the 4700 FCS controller and storage of personal computer files on a 4700 controller disk drive.

Ampersand Corp.'s Branchbanker 4700, which provides customized financial projections, will cost $500, the company said.

More information is available from IBM Information Systems Group, 900 King St., Rye Brook, N.Y. 10573.

Early warning systems touted as exec desktop tools

CW at NCGA

By Edward Warner
CW Staff

DALLAS — Desktop computing power in the hands of a manager usually means spreadsheets and "what-if" analysis. In the hands of the corporation's top executives, desktop computing can affect a firm's overall strategy.

But how does MIS get computing power onto the chief executive officer's cherrywood credenza? Three experts in a panel forum here at the National Computer Graphics Association (NCGA) conference last week addressed that problem.

Alan Paller, an analyst and president of AUI Data Graphics, a market research firm, urged his audience to develop systems that would keep their firm's top executives abreast of key indicators of the corporation's health. Calling this type of tool "the ultimate application," Paller said that desktop computing systems given to top executives should display those indicators graphically in what he referred to as a visual early warning system.

One company that adopted such a system for its strategy-making executives in 1981, the UK's Imperial Group, reversed a precipitous revenue downturn after a visual early warning system was installed. In the next year, Paller said, the Imperial Group's stock rose 180%.

System played a part

No one can say for sure that the visual early warning system was responsible for the turnaround, Paller observed, but the firm's chief executive officer "thinks the system had something to do with it," and that has ensured the system's acceptance at Imperial.

When developing a strategy to put computing power on top executives' desks, Paller advised, system designers should ignore the hardware and concentrate almost exclusively on what information needs to be presented. Though that information must be displayed in a manner that can be understood quickly — hence the emphasis on graphics — Paller maintained that the executive should be able "to go [into the corporate data base] and find out where the answer is."

The need for access to the most current of the corporation's data favors executive workstations over stand-alone personal computers, he said.

Another of the panel's members, Jon Rockeman, an engineering support systems analyst with Northrup Corp.'s Aircraft Division, said a terminal-based system of executive workstations is being used by the division's chief engineers.

The Northrup system, called the Executive Management Information Network (Emin), gives executive engineers access to the company's nationwide data base, limited by their need for password access to each level of it.

Since the network runs on an IBM 3033 mainframe, the executives also won access to mainframe software including IBM's Professional Office System for office automation applications including electronic mail, Mathematica Products Group's Ezmis II and Isaco Graphics, Inc.'s Tell-A-Graph for graphics creation.

The system is on-line with each of the top engineer's offices and with their conference room. "Now we have staff meetings, and [the executives] can pull up a particular piece of data on the terminal," Rockeman said.

Paller

The Emin system has succeeded to the point where its terminals will be replaced with IBM 3270 Personal Computer/Gs, machines with built-in IBM terminal emulation and graphics capabilities. Though the 3270-PC/Gs can support a windowed display of up to four simultaneous mainframe sessions, Rockeman said it is likely that only two of the windows will be used — one for data and one to convert that data quickly to a chart.

What the developers of a corporate executive workstation system can pay far less attention to is the user interface, Paller observed. Pointing to the results of user studies, Paller said that "function always beats form, regardless of how hard it is to use it."

Light pens, mice and voice input, he noted, are all great ideas, but none is a replacement for the keyboard, despite the popular belief that executives fear such an interface.

Paller urged his listeners to push for systems of executive workstations, if not for their corporation's sake, then for their own. Such systems give the MIS department high visibility and offer a high payoff for everyone involved. Good MIS managers are often anonymous, he said. Executive workstation networks "are going to keep you from being anonymous."

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CDC, Applicon announce CAD software workstations

CW Staff Report

DALLAS — At last week's National Computer Graphics Association (NCGA) conference, two computer-aided design systems vendors rolled out stand-alone engineering workstations based on 32-bit technology, which run each firm's proprietary CAD software.

Control Data Corp. announced its first intelligent stand-alone engineering workstation, the 793 Icem, so named because it runs CDC's Integrated Computer-Aided Engineering and Manufacturing software.

That software has previously run only on CDC's mainframes, said Gerald Barret, manager of marketing support programs in CDC's Computer-Integrated Manufacturing (CIM) marketing group.

Applicon's Aria II out

Meeting CDC's challenge, Applicon, Inc. introduced its Aria II family of engineering workstations at the conference. The Aria II line is the successor to Applicon's Aria line of workstations and, according to an Applicon spokesman, each workstation is based on a version of Digital Equipment Corp.'s Microvax supermicrocomputer.

Each Aria II workstation is said to include a minimum of 3M bytes of memory and 160M bytes of disk storage. The engineering workstations range in price from $99,000 to $125,000 and come bundled with Applicon's Bravo! CAD software, keyboard and monitor.

The CDC 793 Intelligent Workstation is reportedly based on a Data General Corp. minicomputer and includes two displays: color for CAD and monochrome for alphanumerics.

Standard memory offered

A second pair of displays can be added to a CDC Intelligent Workstation, resulting in a configuration that the vendor calls the Icem Workstation Cluster.

According to the vendor, the Intelligent Workstation offers standard memory of 2M bytes, expandable to 8M bytes, and from 79M bytes to 240M bytes of disk storage. It is priced from $86,775 to $116,325, depending on the software selected.

The Icem Workstation Cluster is priced at $6,265, based on entry-level Tektronix, Inc. 4100 graphics terminals, or $127,625, based on two CDC displays.

CDC's CIM Division is located at P.O. Box O, Minneapolis, Minn. 55440.

Applicon is located at 32 Second Ave., Burlington, Mass. 01803.

—Edward Warner

HP launches bevy of products at NCGA conference

By Edward Warner
CW Staff

DALLAS — Hewlett-Packard Co.'s HP 9000 Series 500 engineering workstations received a local-area network, a graphics display station and a server device for sharing peripherals in a product rollout at the National Computer Graphics Association (NCGA) conference here last week.

A graphics accelerator for the HP 9000 Series Model 550 engineering workstation, a 32-bit supermicrocomputer, was also announced. The accelerator is one of a new breed of products for computer-aided design and reportedly includes in its read-only memory (ROM) several CAD functions usually found only in software. Having such functions as the conversion of images to three-dimensions embedded in ROM enables applications to run faster, HP said.

The lead product for the Series 500 workstations was the HP 9000 LAN, a network supporting both Ethernet 1.0 and the IEEE 802.3 standard for baseband communications. Based on HP's Advanconet architecture, the HP 9000 LAN reportedly can link up to 100 devices in a 500-meter daisy chain in which the failure of one device would not cause the entire network to fail.

The LAN replaces HP's 2285A LAN and reflects HP's growing confidence that 802.3 will become an industry standard, according to a HP spokesman. The HP 9000 LAN uses interface cards that plug into each networked device. The cards replace the bulkier box interface used by the HP 2285A LAN. Users of the latter can return their interface boxes and receive a $700 credit for each toward the purchase of each of the HP 9000 LAN's $2,200 interface cards under an offer good until November.

Software for the HP 9000 LAN is priced at $1,700 for the first single-user computer attached and $850 for each additional single-user machine. For multiuser computers, the software is priced at $4,000 for the first machine and $2,000 for each additional processor. The graphics display station introduced at NCGA is said to feature a display controller interface that plugs directly into the memory processor bus of the Model 550, making possible 2M byte/sec. transfers of data. The Model 550 will support three such display stations, HP said.

The display station, without a Model 550 processor, is priced at $15,000 in a package that reportedly includes a keyboard, controller, cables and a 19-in. color graphics monitor. A single-user display station, with a Model 550 having 2M bytes of memory, is priced at $45,000. An optional graphics accelerator for the Model 550 is said to include a bit-slice processor as well as floating-point mathematics chips and is priced at $7,250.

In addition HP introduced, the HP 50960S, a file server for its Shared-Resource Management system, under which HP 9000 machines can share files and peripherals. The server consolidates on one circuit board the work for which its predecessor required five boards. The HP 50960S, available in May, carries a price tag of $6,995, reportedly 32% lower than the unit it replaces.

HP is located at 1820 Embarcadero Road, Palo Alto, Calif. 94303.

ITT ushers in two versions of IBM XT-compatible processing system

By Kathleen Sullivan
CW West Coast Bureau

SAN JOSE, Calif. — ITT Information Systems last week introduced the ITT Xtra XP, an IBM Personal Computer XT-compatible system that the company said offers users 3½ times the processing speed of the XT.

According to the company, the ITT Xtra XP derives its speed from an Intel Corp. 80286 microprocessor running at 5 MHz, coupled with a "zero-wait state architecture."

The ITT Xtra XP's zero-wait state memory is an architectural design that eliminates the need for wait states because the system's memory is able to respond to the 80286 microprocessor as fast as the microprocessor makes demands of it, according to Chris Le Tocq, product marketing manager.

Expansion board

ITT's Xtra XP is said to include 512K bytes of zero-wait state random-access memory (RAM), which can be expanded to 640K bytes. In addition, users can install a proprietary expansion board that offers 1M byte of zero-wait state memory, the company said.

The firm said the expansion board also provides support for Vdisk, a RAM virtual disk option that provides high-speed access to regularly used software. The board can also be used as expansion memory for programs that take advantage of the virtual address mode of the 80286 microprocessor, the firm said.

The computer is said to include 64K bytes of read-only memory (ROM) Bios, which houses a diagnostic monitor. The monitor, which is controlled from the keyboard, reportedly provides diagnostic capability for the central processing unit, interrupts, direct memory access, video and memory.

Printer port included

In a standard configuration, the system includes a parallel printer port, an RS-232 serial port, a socket for an 80287 math coprocessor and five IBM Personal Computer-compatible expansion slots, the company said.

The ITT Xtra XP line includes two models: the Model III and the Model V. Each is said to include a 360K-byte floppy disk drive. The Model III comes with a 10M-byte hard disk drive, while the Model V comes with a 20M-byte hard disk drive, the company said.

The firm said the ITT Xtra XP will support "almost all third-party software written for the IBM [Personal Computer] and the IBM [Personal Computer] XT." The computer includes a speed switch that allows users to slow the system down to 4.77 MHz (the speed of the IBM Personal Computer's and XT's 8088 microprocessor), ensuring compatibility with programs that are sensitive to speed, the company said.

In a standard configuration, the Model III is priced at $3,995, while the Model V is priced at $4,595. For more information, contact ITT Information Systems at 2350 Qume Drive, San Jose, Calif. 95131.

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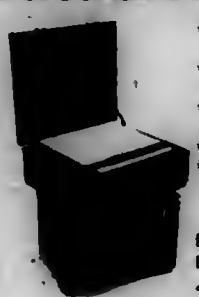

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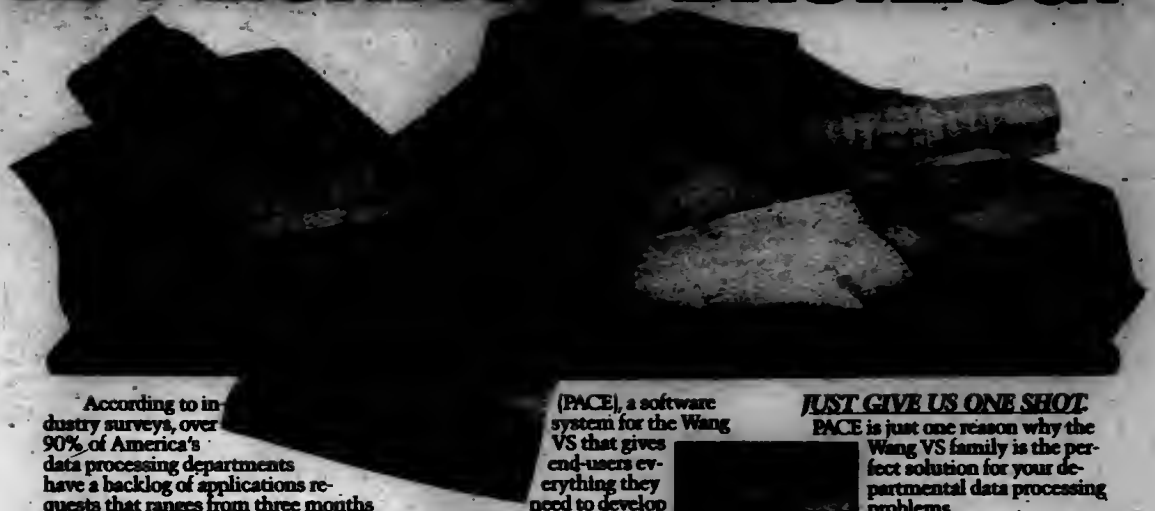

According to industry surveys, over 90% of America's data processing departments have a backlog of applications requests that ranges from three months to three years.

And three years is an awfully long time to wait for anything.

The problem is, with most computer systems, including IBM's System 36, most applications must be developed by experienced programmers. It's a time-consuming process that can account for up to half of your data processing department's budget. And there's a significant "lost opportunity" cost to the end-user as well.

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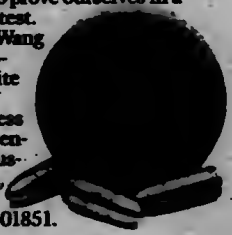

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NEWS

Group proposed to study computer's impact on society

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — Two U.S. senators recently introduced legislation to create the Information Age Commission, which would conduct a comprehensive study of the present and future effects of information systems on the U.S. and its citizens.

The commission apparently would make recommendations to Congress about such issues as computer crime, the effects of automation on labor and computer education.

The proposal (S. 786), introduced by Sens. Sam Nunn (D-Ga.) and Frank R. Lautenberg (D-N.J.), was quickly endorsed by the Association of Data Processing Service Organizations, Inc. (Adapso).

"If the U.S. is to maintain its technical leadership, we must be prepared to plan for, rather than react to, changes brought on by computers. The Information Age Commission has the opportunity to provide us with a window on the future," commented Jerome L. Dreyer, Adapso president.

Nunn and Lautenburg lamented the fact that policy development regarding the information age has been a piecemeal effort and cited recent legislative efforts on computer crime, copyright and privacy. The senators called for a comprehensive review of the problems, benefits and critical policy choices posed by information technology.

Ride wave of change or be swamped

"We can ride the wave of this technological change, or we can be swamped by it," Lautenburg said.

The proposed commission would function for two years and would send a final report to the president and Congress. The bill authorizes $3-million to cover the commission's expenses, and substantial financial support from the computer industry is anticipated.

Under the bill, the commission would focus on at least the following topics:

- The resources needed to maximize the benefits of computer and communications systems to society.
- The resources needed to maintain the U.S. lead in the world information marketplace.
- The education and re-education required to prepare citizens for the information age.
- The effort and resources needed to encourage new technological innovations.
- The impact of computer and communications systems on labor and employment.

The commission is to be composed of 23 members: six from Congress, six from the executive branch and 11 from the private sector, which includes the information industry, state and local governments, labor and academia.

The bill was referred to the Senate Committee on Governmental Affairs for further action. Nunn said he hopes it will be enacted this year.

WASHINGTON UPDATE
Mitch Betts
CW Washington Bureau

IRS union blames tax delays on staff cuts

WASHINGTON, D.C. — The labor union at the Internal Revenue Service last week charged that staff reductions — caused by budget cuts and automation — contributed to the major delays the IRS experienced this year in processing tax returns.

Robert M. Tobias, president of the National Treasury Employees Union, said the Reagan administration has cut the IRS tax processing staff by more than 5,000 positions, whereas tax returns have increased by 41 million since 1960. Consequently, he said, IRS employees have been overworked, and "America has just witnessed the most disastrous income tax processing season in history."

IRS officials said the delays were caused by a rash of computer hardware and software problems associated with a major computer system replacement program [CW, April 15]. But Tobias said that at least 1,100 employees must be added in the tax processing offices "to ensure promptness and quality in processing."

NBS to adopt Ada as standard

WASHINGTON, D.C. — The National Bureau of Standards (NBS) recently announced it plans to add Ada, the high-level programming language developed by the U.S. Department of Defense, to the roster of standard languages recommended for use by U.S. government agencies.

NBS said it plans to adopt Ansi 1815A Ada as an official Federal Information Processing Standard, thus adding it to the current family of NBS-approved languages: Minimal Basic, Fortran, Cobol and Pascal.

The agency said Ada is suitable for those programming applications that involve control of real-time or parallel processing, very large systems requiring modularization, systems requiring very high reliability and systems developed with reusable software packages.

Furthermore, NBS said Ada is strongly recommended in situations where portability among different models of hardware is needed, where the program must be understood and maintained by programmers other than the original ones, and where an application or program is subject to frequent updates.

SBA begins computer security program

WASHINGTON, D.C. — Taking its first step toward implementing the Small Business Computer Security and Education Act of 1984, the U.S. Small Business Administration (SBA) last week appointed a nine-member advisory panel.

In announcing the appointments, SBA administrator James C. Sanders said, "The advisory council will advise me on small business' computer security problems and needs. SBA will then design and make available several standard training programs."

The 1984 law requires SBA to educate small businesses about computer crime and security. However, the budget drafted by the Reagan administration and U.S. Senate leaders would terminate the SBA, so the fate of the agency and the planned computer security programs are unclear.

The advisory council has representatives from the SBA, the Institute for Computer Sciences and Technology and the U.S. Departments of Justice and Defense, in addition to private sector computer security specialists.

AT&T to buy Honeywell factories

By Clinton Wilder
CW Staff

PITTSBURGH — AT&T announced last week that it intends to acquire four of Honeywell, Inc.'s integrated circuit factories and that it will begin selling its 32-bit Unix microprocessor commercially.

AT&T Chairman of the Board Charles L. Brown also announced that the company has filed for a 5.6% overall reduction or a $1 billion annual reduction in long-distance rates. The reductions will coincide with the reduced local-access charges AT&T pays the former Bell operating companies that go into effect June 1. Brown made the announcements at the company's 100th annual shareholders' meeting here.

Brown said AT&T has agreed to negotiate for the purchase of Honeywell's Synertek manufacturing facilities in Santa Cruz, Calif.; Bangkok, Thailand; Singapore; and Munich, West Germany. The two Asian assembly and test facilities are currently Synertek's largest, employing 460 workers in Bangkok and 140 in Singapore.

Brown refused to disclose terms of the acquisition, saying the agreement was still in the negotiation stage.

If approved, the deal will be AT&T's first acquisition of another computer vendor's component manufacturing facility. AT&T has traditionally made chips and other electronic parts for its own computer and communications equipment but is now seeking to "underscore its intent to be a major player in the worldwide components business," according to John Nemecek, executive vice-president of AT&T's Technology Systems Group.

Company officials refused to comment on target market applications for the AT&T 32-bit Unix microprocessor until it is officially unveiled as a commercial product at the Institute of Electrical and Electronics Engineers, Inc.'s annual exposition in New York this week.

'About what we expected'

Additionally, the company reported first-quarter net earnings of $354 million, or 31 cents per share, on $8.3 billion in revenue vs. $227 million net, or 20 cents per share, on $8.1 billion in revenue a year earlier. Brown said of the results, "They are about what we expected."

The company told its shareholders that first-quarter revenue was $8.30 billion, a modest gain from the $8.14 billion reported in the first quarter of 1984. Earnings, however, jumped 56% to $354 million, or 31 cents per share, in the first quarter, compared with $227 million, or 20 cents per share, in the comparable quarter one year ago.

In response to a question about the potential impact on shareholders of the pending MCI Communications Corp. $1.8 billion antitrust suit against AT&T, Brown said he did not believe MCI would win the amount of damages sought. Retrial of the suit began earlier this month in Washington, D.C.

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AEA: 17% job turnover for engineers

PALO ALTO, Calif. — The job turnover rate for engineers in the electronics industry was 17% in 1984, according to the first such survey by the American Electronics Association (AEA).

By contrast, the electronics industry's total employee turnover rate was 21.4% in 1983, the most recent year for which the data is available.

The engineers survey, based on data from 669 AEA member companies nationwide, found that 22.2% of software engineers switched jobs, compared with 15.2% of hardware engineers.

In a regional breakdown, the survey found metropolitan New York's 46 member firms had the highest overall turnover rate, 20.7%. Northern California, by far the largest region in the survey with 225 member companies, had a 20.1% turnover rate, as did Washington state's 27 member companies. Orange County, Calif., and New England were next on the list with turnovers of 19.3% and 17.6%, respectively.

Only 11.9% of the engineers in Florida's 14 member companies switched jobs during the year. The other lowest rates were Oregon's 20 member companies with 12.1%, Colorado's 18 member companies with 13.1% and Minnesota's 19 member companies with 13.5%.

Twenty-one companies in Texas experienced both the highest turnover among software engineers (25.7%) and the lowest among hardware engineers (8.5%). Orange County had the highest hardware engineer turnover at 20.8%, while software engineers in Oregon changed jobs the least (12.7%) in 1984.

AT&T files for short-haul rate increases

WASHINGTON, D.C. — AT&T Communications has proposed tariffs that would increase its short-haul interstate traffic rates, which it said will better align the price it charges for calls with the cost of providing them.

The tariff increases would impact customers making interstate calls over distances of 55 miles or less and would go into effect April 26 if approved by the Federal Communications Commission.

AT&T said the proposed changes would affect approximately 13% of its interstate traffic and would generate $74 million annually in additional revenue.

The rate increase request comes at the same time that the FCC is ordering AT&T to reduce interstate message telephone service rates by an average of 5% across the board to reflect the $1 monthly access charge revenues that will be collected from customers starting June 1.

AT&T said that, for calls over distances of up to 10 miles, the day rate for the initial minute would increase from 20 cents to 26 cents and for each additional minute from 15 cents to 19 cents. For calls over distances of 11 miles to 22 miles, the one-minute day rate would increase from 30 cents to 46 cents and the additional-minute rate from 21 cents to 26 cents.

For calls over distances of 23 miles to 55 miles, the proposed rates would increase the cost of the first minute from 46 cents to 51 cents and the additional-minute rate from 26 cents to 30 cents. AT&T Communications said that the rate changes would still be discounted for night and weekend rates at the 60% and 60% levels, respectively, that are currently in effect.

AT&T Communications said the principal reasons behind the request for rate increases for short-haul interstate calls comes from investments in transmission technology that make distance sensitivity less important. It said that past tariff restructuring proposals before the FCC sought to bring these shorter haul rates up to the costs of providing the service, but the FCC required changes in those proposals to lessen customer impact.

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Informatics general corporation

application development report: MARK V

MARK V® HELPS AIRCRAFT MANUFACTURER ENTER ONLINE PROGRAM DEVELOPMENT WORLD

Use of MARK V at Beech Aircraft Corporation has not only increased the productivity of the firm's programmers and analysts — it has given them a whole new capability for online program development.

Prior to acquisition of MARK V, an implementation System from Informatics General Corporation for generating online applications, Beech had largely limited itself to purchasing ready-made packages for its online systems. "Until we acquired MARK V, greater levels of technical expertise and manpower were required to develop online systems," explained Craig Young, MARK V Coordinator in the Beech Computer Service Department.

"We're an IMS/DC shop, and to this environment a COBOL programmer has to be thoroughly versed in IMS and DLI in order to write online programs," he added. "We're talking about months and months before you develop enough expertise to be productive. But a programmer using MARK V doesn't have to learn IMS or DLI, and this shortens the learning curve tremendously. We can take recent hires, or people who for one reason or another have not been involved with IMS, and almost immediately put them to work developing online systems."

Beech, a leading manufacturer of business and commuter aircraft, employs about 40 programmers and analysts, nearly three-quarters of whom have learned to use MARK V, Young noted. Total employee count for the firm is approximately 7,500. The company uses an IBM 3084 mainframe, running under the OS/VS MVS operating system.

Their pilot MARK V project — the first online system ever developed by the firm in-house, Young noted — was an interactive Industrial Relations System linking the functions of Personnel and Payroll with a common online data base.

This system allows Personnel to load information on new hires into the data base from their online terminals, with control of employee data being automatically transferred to the Payroll Department after employment begins.

Coding for the Industrial Relations System was performed by two Beech programmers who attended the MARK V training class but had no prior experience in data communications or online system development.

In addition to MARK V, Beech also uses MARK IV®, an Informatics Implementation System for generation of batch application, and SHRINK, an Informatics data compression system.

"The online data base for the Industrial Relations System has to interface with our existing batch payroll system," Young explained. "To facilitate this we're using MARK IV on the front end, to load the online data base from the existing batch personnel files — and we're also using MARK IV to send the online data base and update existing personnel files that are used in writing paychecks. In effect, we've got MARK V in the middle and MARK IV on both sides of it."

Beech has implemented a number of additional online systems since completion of the pilot Industrial Relations System, Young pointed out. "MARK V has made us a lot more responsive to user requests than we used to be," he noted. "For example, we recently put up an online Telemarketing System for our marketing people that has met with enthusiastic approval from the users.

"We had not had a Telemarketing System in the company before, and when we began developing this online system the user was making his best guess at what he wanted, but really wasn't sure," Young explained. "Here, the flexibility MARK V provides to prototyping a system really came to our rescue. It was a tremendous asset to be able to quickly change or add the things the user wanted."

Other online systems recently developed using MARK V include:

- An Inventory Management System used by Procurement to maintain information on manufacturing inventory. This system was originally purchased from an outside vendor, and was written in COBOL; Beech programmers have added a number of sections and screens to it using MARK V.
- A Production Inventory Control pick list system.
- A Tool Control System to track location of tools.
- A Quality Assurance System that keeps track of periodic calibration of tools and certification of personnel as required by FAA.
- A system to cross-reference vendor part numbers with the company's in-house material code numbers.
- A report distribution control system for the Computer Services Department.
- A system to track reliability of target missiles manufactured by Beech for the military services.

"There's a lot of enthusiasm among our programmers to use MARK V," he said, "because it's a way for them to get into the world of interactive programming quickly, without having to learn all the ins and outs of IMS data communications. They consider it a real break from the humdrum of batch systems, to be able to work on an online application."

"The advantages to the company of having information available online are obvious — and now that we know how easy it is to get an online system up, we're much more inclined to look at writing an application in MARK V and putting it online," he added.

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ACM/SIG meet slated for May 1

DANVERS, Mass. — The Association for Computing Machinery's Special Interest Group (ACM/SIG) for Small and Personal Computing will hold its 1985 symposium at the Sheraton-Tara Hotel here May 1-3.

Two tutorials will kick off the symposium. The first, by Richard F. Rescorvo, professor of computer science at the University of Colorado, will examine "How to Use Modula-2 to do Object-Oriented Design in Small Systems." Allen Schwartz, a software engineer at Bridge Communications, Inc., will present the second tutorial, "An Introduction to Using Unix."

Registration for the symposium costs $120 for ACM/SIG members, $130 for ACM members and $140 for nonmembers, if received by April 10. After that date, registration prices are $140, $150 and $160, respectively.

Registration for the tutorials is priced separately at $115 for ACM/SIG members, $115 for ACM members and $120 for nonmembers, if received by April 10. After that date, registration prices in each category rise by $10. Student registration, however, remains priced at $50.

Inquiries about the conference may be directed to Howard A. Sholl, SIGS Department, U-157, University of Connecticut, 260 Glenbrook Road, Storrs, Conn. 06268.

IEEE autumn meeting set

WHISTLER MOUNTAIN, Canada — The Ninth Data Communications Symposium will take place Sept. 9-13 at the Delta Mountain Inn here. This event is jointly sponsored by the Institute of Electrical and Electronic Engineers, Inc. (IEEE) Computer Society and the IEEE Communications Society.

Ed Sonnegath, an IBM Fellow who was a principal architect of IBM's Systems Network Architecture, will be one of two keynote speakers at the symposium, according to the sponsors.

The second speaker will be Shen Lin, Bell Laboratories' executive consultant, who is said to be a leading designer of voice/data communications networks.

Advance registration fees for the Ninth Data Communications Symposium are $190 for members, $225 for nonmembers and $115 for full-time student members.

Late registration fees are $225 for members and $260 for nonmembers with the student price remaining the same, a spokesman said.

Additional information about the IEEE symposium is available from B. W. Stuck, Technical Program Chairman, Ninth Data Communications Symposium, Vistel Corp., 344 Raritan Center Pkwy., Edison, N.J. 08837.

Justice: Reallocate long-distance callers

AT&T against change, could lose customers

WASHINGTON, D.C. — The U.S. Department of Justice last week threw its weight behind a plan to allocate undecided long-distance callers among all carriers. The move would change the terms of the original divestiture agreement, which accorded the traffic to AT&T Communications.

The Federal Communications Commission is currently considering the allocation plan, which AT&T is opposing.

The Justice Department filed its comments with the FCC last week.

MCI Communications Corp., GTE Sprint Communications Corp., Satellite Business Systems and other long-distance carriers that compete with AT&T have recently criticized the original divestiture plan. Under that plan, telephone users who did not preasubscribe to a particular carrier after equal access was implemented within their local telephone exchange area were automatically directed to AT&T Communications.

According to the Justice Department, as many as 50% of the telephone users in areas where equal access has been implemented have not selected any long-distance carrier and, as a result, were routed by default to AT&T Communications.

The Justice Department asked the FCC to implement a plan instituted by Northwest Bell, where ballots are sent to customers asking them to select a long-distance carrier. Customers who do not choose a carrier are then allocated among all carriers serving the exchange according to the percentage originally selected by customers in the first balloting.

The Justice Department said that under the Northwest Bell plan, 65% to 70% of customers are selecting a carrier on the first ballot. The department added that the changes in allocating default traffic would promote competition in the long-distance markets.

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Surveys split on Apple's demand in corporate mart

By Edward Warner
CW Staff

Two recent surveys of corporate personal computer users have reached opposite conclusions as to whether Apple Computer, Inc. will be able to penetrate significantly the corporate personal computer market in 1985.

A survey by Future Computing, Inc., a Dallas market research firm, found that roughly 32% of office workers who expect to be getting an office personal computer this year want an Apple. However, a survey by Software Access, Inc., a Mountain View, Calif., market research firm, found that only 6% of those who plan to buy an office personal computer this year want an Apple.

> ***The Future Computing and Software Access surveys agreed, though, that regardless of Apple Computer's 1985 market penetration, the corporate personal computer mart will remain IBM's ball game.***

Both surveys agreed, though, that, regardless of Apple's 1985 market penetration, the corporate personal computer mart will remain IBM's ball game. The Software Access survey of 100 microcomputer managers in Fortune 500 companies found that 56% of its respondents planned to buy IBM Personal Computers this year. The survey did not specify which models. The Future Computing survey found 43% of office workers who expected to get a personal computer this year preferred IBM.

The Future Computing survey, which used data from 45,000 mail questionnaires and 3,000 follow-up telephone interviews, differed from the Software Access survey in that it received responses from both future users and from those with the resources to buy corporate personal computers. The survey found a major difference between the two groups: The future users wanted Apple micros almost as much as IBM micros, but the buyers — by a 72% margin — planned to buy IBM.

Such a conclusion was not surprising to several corporate microcomputer managers contacted by Computerworld.

"I agree with the IBM dominance [revealed by the Software Access survey]," said Doug Richardson, program coordinator of the Microcomputer Managers Association of Michigan and micro manager for a Detroit-area manufacturer. "I'm also surprised at the number of users who want to buy Apples," he added, citing the lack of software for the Apple Macintosh — the product with which Apple has said it hopes to crack the corporate market.

Richardson had his own theory on why the respondents of the Future Computing survey reacted as they did. The future users probably have an Apple computer at home, he said. "The MIS directors, on the other hand, have a Big Blue box in the other room."

The vice-president for personal computing for a New York bank, meanwhile, said he could find no evidence of such extensive support for the Macintosh among those at the bank who would be new users this year. A similar response came from the MIS manager of State Street Bank in Boston.

Inevitable collision

According to Future Computing President Egil Juliussen, the disparity between the expectations of this year's new users — many of whom want Apple machines — and the intentions of corporate buyers who favor IBM means "there is a collision that's going to take place."

The Software Access survey is said to be part of a larger, ongoing research effort that involves responses from 10,000 households and 100 corporate microcomputer managers. When completed, it will be available in modules costing $4,000, $5,000 and $6,000. The entire study will be available for $14,500.

Further information is available from Software Access, which is located at Suite 1230, 2025 Marine Way, Mountain View, Calif. 94043.

The Future Computing survey is also part of a larger project involving an omnibus survey sent to 70,000 households, half of which responded. From that sample, Future Computing said it telephoned 900 people it identified as "next users" — those who expected to be using an office personal computer for the first time this year.

Data from the survey is contained in the Future Computing report "Office Personal Computers: The Customers," which costs $3,000. For more information, Future Computing is located at 811 LBJ Freeway, Dallas, Texas 75251.

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Mark W. Ciotek
CEO and President
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As one person intimately involved with manufacturing, Mark W. Ciotek, explains: "Manufacturing today has to be treated as an integrated process instead of as isolated functions. Successful manufacturers are discovering that with the right approach to computer-integrated manufacturing (CIM), you can produce goods quickly without sacrificing quality."

Mark is CEO and president of NCA Corporation, a leading software developer and marketing company that's helping manufacturers stay competitive with a manufacturing resource planning (MRP II) system called MAXCIM.™

With 20 integrated modules, MAXCIM is designed to handle everything from financial planning in the executive office to job tracking on the factory floor.

"Our comprehensive approach requires a flexible computer system with a wide range of solutions," Mark points out. "That's why we chose Digital's VAX™ computers for MAXCIM. And that's why manufacturers are choosing us."

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Digital designed the VAX computing environment in a unique way – around one architecture and Digital's VMS™ operating system. "They're the only ones who have done this," Mark states. "As a result, we know we're working with the most flexible system available."

Included within the VAX computing environment is the VAX Information Architecture, a comprehensive system of integrated information management software products. From this vast array of products, NCA's customers can select those best suited for their needs.

Three of these VAX Information Management products – FMS™ forms management system, DATATRIEVE™ query language and report writer, and Common Data Dictionary – are used in conjunction with MAXCIM. By incorporating these products, MAXCIM optimizes the user-interface, and provides easy access and universal definitions for all of your data.

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whether it's stored across the plant or at a plant across the country.

"Digital's approach to software is ideal for MAXCIM because the performance of an MRP II package is enhanced by the degree of integration between modules," Mark says. "And the superior integration within both MAXCIM and the VAX Information Architecture gives manufacturers the most flexible solution possible."

"AS PRODUCTION [illegible] SO CAN THE POWER OF VAX."

"The economies of manufacturing demand standardization and growth," Mark points out. "With VAX computers, our customers have both."

Every model in the best-selling 32-bit architecture, from the MicroVAX I™ system right up to the largest VAXcluster™ system, is compatible, providing an economical growth path from desktop to data center.

"Because of this compatibility, you can use MAXCIM across the entire line of VAX systems," Mark says. "So when our customers upgrade, they can bring their existing applications right along with them."

This eliminates the need to convert databases, retrain people or totally abandon your investment. And VAXcluster systems provide enough computing resources to meet virtually any requirement.

"VAX computers let us meet the needs of just about any manufacturer," Mark says. "The low-end of the VAX family is ideal for smaller manufacturers, while clustering makes our solutions attractive to much larger companies. Some of our business now comes from existing customers who are upgrading their Digital systems to meet their growing needs."

[illegible]

"Digital has a solid reputation among manufacturers," Mark states. "After all, they're the leader in distributed processing and are committed to CIM with dedicated resources. And the VMS operating system provides an unparalleled path for growth."

In fact, Digital anticipates and meets manufacturers' needs so successfully that NCA developed MAXCIM to run exclusively on Digital systems.

"We've never felt the need to offer MAXCIM on any other system," Mark says. "They're the experts in systems and we're the experts in MRP II software. Together, we can offer manufacturers the most comprehensive solution.

"Our customers have found that this is the ideal solution for them. With this kind of success," Mark concludes, "we'll never second-guess our choice of VAX computers."

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To learn about Digital's VAX system, call 1-617-467-CAEM. To learn about MAXCIM, call 1-800-622-6584. Or write to Digital Equipment Corporation, 200 Baker Avenue, West Concord, MA 01742.

[illegible]

[illegible]

Bank's aggressive high-tech plan coins new MIS role

By D. Peter Vanderlee
Special to CW

TORONTO — "The necessary strategic edge" is what the Royal Bank of Canada is after, according to one bank executive.

With assets of $88 billion and more than 36,000 employees spread over 40 countries, Royal is Canada's leading financial institution. To maintain its lead, the bank will spend $2.5 billion to implement new technology and construct a worldwide electronic network.

The bank's basic goal is to develop electronic means of delivering services and information.

"What's happening now is that the MIS function is becoming diffused," said Jim Grant, senior vice-president of systems. "We no longer face the task of trying to move MIS into the mainstream of the organization. We've gone beyond that."

Grant claimed Royal's strategy is a reflection of how aware senior officers of the bank have become of the importance of technology. "Everyone at the senior level recognizes our growing dependence on computer communications," he noted. Royal has 170 officers.

MIS is "an equal partner" in day-to-day business at the bank, according to Grant, and systems professionals are increasingly involved in the very early stages of business ventures.

"This is significant," he said, "because it proves MIS is an active player, across the board, in the bank's business."

MIS challenges

As active players, MIS professionals face entirely new challenges that lead directly into areas of revenue responsibility. Grant pointed out, "What we have to ask ourselves is, 'how do we move knowledge from MIS to the marketing side? How do we move capabilities provided by today's technology to the customer?'

"Our challenge is to package all that capability so that it is acceptable, even desirable, to the customer and so that it leads to new business," Grant added.

Grant said three things must be done: "You have to move the systems staff closer to the customer. You also have to find some way of tying that staff back to the knowledge base by giving them the tools that allow them to define business requirements — like business modeling tools — in a form that can be processed by the central computer communications group. With that done, you create solutions and then automate the hell out of it."

In the long term, Grant claimed, you aim to devise ways that make interaction with the system a comfortable, normal part of the daily work routine.

Grant also maintained that because information processing is no longer a peripheral issue, the people involved in handling the processing of that information, especially the veterans of the '60s and '70s, must consider doing things differently in the 1980s.

"They have to realize how mainstream MIS functions are," Grant said. "They have to organize and structure projects from a management perspective and, most important, they have to realize the impact of what they're doing."

Management for MIS

Grant said the value of systems experience can also be proven by the number of management positions becoming available to MIS professionals.

At the Royal Bank, for example, a member of Grant's staff was recently promoted to a vice-president position in the retail banking sector of the organization.

"If we're any kind of example, there's a growing need to fill management positions with people who understand the strategic value of computers. This trend is accelerating, and more and more of my systems staff [members] are taking on management responsibilities throughout the bank."

Grant maintained the systems staff members are not necessarily leaving him, but rather they are taking technology closer to the bank's customers — something he views as helping provide a competitive edge for the bank.

'Fine-tuning systems'

"What we're doing as systems professionals is fine-tuning systems for markets," he noted.

Although the bank is not presently considering buying its own satellite or cabling as part of its overall network scheme, an exclusive electronic highway is under way.

It has to be exclusive, according to Grant, "because providing a secure network is not only a priority — it's critical."

A faultless and secure network will be built, Grant said, because it will also become the Royal's principal competitive edge. "You can bet," he concluded, "that security is becoming as much a product as credit is becoming a commodity."

Vanderlee is the editorial director for Computerworld Canada, *a sister publication of* Computerworld *based in Mississauga, Ont.*

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PC Magazine *February 19, 1985*

"Enable may legitimately claim to be the only package you'll ever need."

Computer Buyer's Guide and Handbook
November, 1984

"...if an office is looking to step up to across-the-board integration with a multitude of functions...this is the one program to seriously consider."

Personal Computing
March, 1985

"Offering true integration among all of its applications modules...[Enable is] a powerful production tool that can serve everyone in the office, from data entry personnel to the vice-president of marketing. Each module could stand as a full-powered application in its own right."

PC Magazine
February 19, 1985

"Enable, a five-function integrated system from The Software Group, merits a close look by any individual or organization interested in a solid package that is well balanced in all of its applications."

Popular Computing
March, 1985, Paul Goldner, Raymond Hejal, Yoram Lirtzman, Michael Wilding

"Quite simply, this package has so many outstanding attributes that even the worst skeptics of integrated software have to be impressed. The spreadsheet is very close to 1-2-3; the word processor combines the best thinking of WordStar, MultiMate, Volkswriter, and EasyWriter; the data base offers the functionality of dBASE II, but with many of the ease-of-use features of PowerBase; and the program offers business graphics and telecommunication. Taken as a whole, Enable surpasses the functionality of Symphony, Framework, Aura and Open Access."

IBM PC Update
December, 1984

Enable first in "Performance" rating—including speed and capacity of all modules tested. Enable first in "Versatility" rating—including power and functionality of all modules tested. Enable rated first in overall evaluation of the word processor module.

Software Digest Ratings Newsletter
Rating of 15 Integrated Products
December, 1984

"Enable welds its five applications together with outstanding integrity—yet each is exceptionally full-functioned in its own right."

Business Computer Systems
January, 1985

"Enable is one of those programs that can be up and running with most of the features you need in a few hours. As you need more, you can get deeper into the program and learn at your own pace."

Infoworld
January 21, 1985

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INC.
February, 1985

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NEWS

Insurance firm customizes DP with net management

SURREY, England — A health and life insurance firm here, with branches scattered throughout England, Scotland, Ireland and Wales, prides itself on being the technology leader in the industry.

"We were into on-line systems very early, and the size and complexity of our system is growing," said Steve Randall, systems engineer with Friends Provident Life Office (FPLO).

FPLO has 800 IBM 3270 terminals, 300 in its branch offices and 500 at corporate headquarters. These communicate with two mainframes, an IBM 3033 and a 3083.

A second network is a Viewdata Corp. of America system. This system communicates through British Telecom and its Prestel videotex service to provide a gateway to FPLO's corporate data bank, giving branch offices and their brokers an interactive quotation and policy inquiry system. To replace FPLO's time-consuming manual methods for tracking system reliability and invoices, a Netman data center and communications network management system from California Software, Inc. was installed in mid-1983.

When FPLO's system was smaller, elaborate manual tracking methods were used, which did the job reasonably well, according to Randall. Price changes were noted on index cards. Problem tracking was handled by writing incidents on standard forms that were kept in what FPLO calls the Incident Book. At the end of the week, an employee would look through the Incident Book, add up the downtime and try to allocate it to the appropriate functional area. A summary was kept showing the number of incidents that affected different vendors and inventory items and the total time lost when a piece of equipment was down.

As the system grew, the manual methods became impractical. They took too long, were not comprehensive enough and only one person at a time could look at the listings.

In addition, information such as the number of specific types of terminals in a certain location and whether equipment was purchased or leased was difficult to obtain. Some of this information was stored on the system, but it was unstructured.

Pinpointed system weaknesses

With Netman installed, this information was fully organized and readily available. Reports, generated on request, pinpointed areas where the system was weak and why, and traced downtime to vendor response or operator failure.

Netman's four modules covered most of FPLO's needs. The finance module, patterned after IBM's invoicing system, stores computer-related invoice information. When FPLO's external invoices arrive, Netman generates a report that is passed on to the accounting department for invoice confirmation. The configuration module helps an inventory of hardware, software and other network components according to their relationships and interaction with each other. The problem management module tracks breakdowns, the methods and time of resolution and downtime for hardware, software and connecting links as well as environmental control devices, which include fire alarms, air coolers, generators and backup equipment. This information remains in permanent records, providing a performance history for each component.

Randall chose to customize several Netman reports. "When we wanted to customize, it was fairly easy," he said. "In all cases we were able to take a Netman-provided report and adjust it slightly to do what we wanted."

Unique requirement

One of FPLO's fairly unique requirements was a need to track the efficiency of the computer services the company provides to each of its branches, he said. The branches wanted to know, for example, whether the Scottish city of Aberdeen was getting better service than Belfast, Northern Ireland.

Randall customized Netman to generate reports with information from the data center. Netman also provides a link to British Telecom and handles word processing. Downtime is recorded against these functions as well as on an on-line system that produces the policies and the network control program. The on-line system and the network control program were treated as links in the chain of components to the branch offices, since the entire operation is affected when they are down.

FPLO has not only customized some Netman capabilities to meet its unique needs, but has gone one step further, Randall said. It built a Netman report that generates Vtam definitions, obtaining the addresses of the terminals and the systems users will log on to from Netman. This virtually eliminated the painstaking systems programmer task, he said. Using this implementation, network operators simply type in two pieces of information — what system the user logs on to and what systems are available to the user. A Netman report defines to the IBM MVS operating system what terminals users are on and what they are to do.

See FPLO page 28

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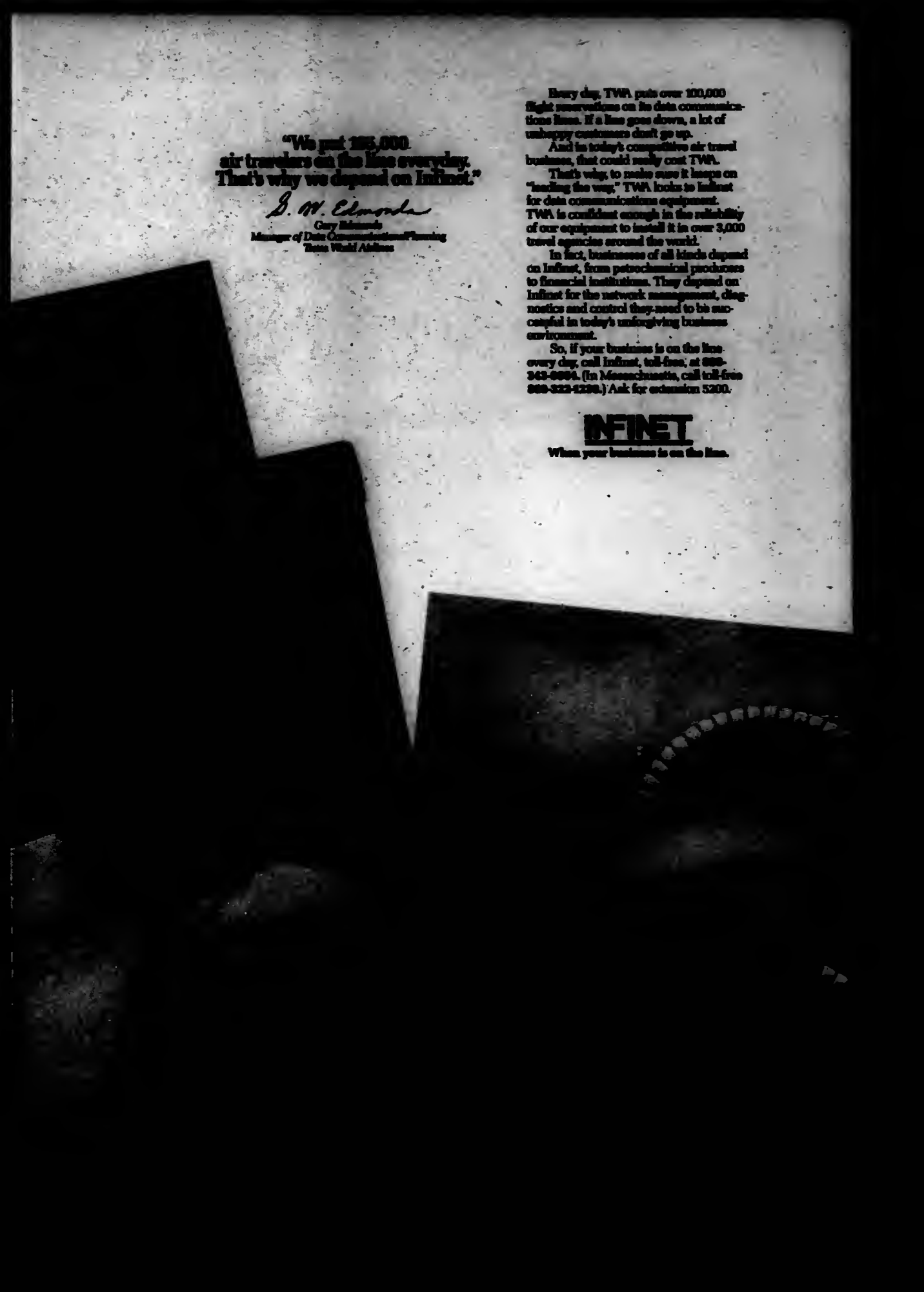

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G. W. Edmonds

Gary Edmonds
Manager of Data Communications Planning
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AUSTRALIA

BRISBANE — The favorite, Datapoint Corp., has been beaten by an office automation dark horse, Digital Equipment Corp. Pty. Ltd. in the race for a lucrative government contract here with the Queensland Premier's Department. The contract calls for DEC to automate the entire state government over an unspecified duration of time.

■

CAMPERDOWN — Following an emerging trend set by nonbanking financial institutions, the Computer Bureau Joint Services Pty. Ltd. has opted for an Olivetti Corp. CPS 32-Electronic Funds Transfer switch, despite the dominance here of Tandem Corp.'s Base 24 EFT switch product.

One of the reported advantages of the CPS 32 is that it is compatible with Tandem's Base 24 format, according to Martin Calvey of Joint Services.

SINGAPORE

SINGAPORE — Since Singapore's first electronic bulletin board broke local telecommunications regulations when it opened for business last November, the number of bulletin boards in this country has grown to seven. The list includes the computer user groups in the Association of Private Licensed Aircraft Engineers, the Singapore Armed Forces Microcomputer Society and the Singapore Monitor, the daily newspaper here. The growth of bulletin boards has been attributed to the recent relaxation of rules preventing private ownership of modems.

SWEDEN

STOCKHOLM — Ericsson Information Systems, Inc. launched a 16-lb .plasma screen portable computer aimed at the European marketplace.

The portable reportedly features a 512K-byte memory, a 5¼-in. floppy disk drive, a detachable keyboard and a thermal printer, for approximately $3,900. The company also announced that its Alfaskop terminal is now available in three versions: with either a black-and-white screen, a yellow-on-brown screen or a color display screen.

WEST GERMANY

HANNOVER — As of 1986, there will be two Hannover Faires: one exclusively for data processing professionals and one for the rest of the manufacturing community.

The Hannover Faire, considered to be the world's largest industrial trade show spanning 13 exhibition halls, has traditionally showcased industrial and agricultural equipment along with information processing equipment.

The information processing segment of the show, known as the World Center for Office and Information Technology, is thought to have outgrown the show: Ten years ago, there were 770 computer vendors at the show, but this year, that number grew to 1,220 firms, with another 300 companies on the waiting list for exhibit space.

FPLO from page 24

Randall also runs Netman on ISPF, which was "... just a matter of tailoring the menus," he said. This allows Netman users to look at multiple menus on-screen to see problems and how they might impact the configuration.

It also enables users to get into other functions that run under IBM's TSO as well as submit report JCL. According to Randall, with this capability, users do not need to know any JCL at all. FPLO also uses Netman to perform a tape library function for IBM products and fix distribution tapes.

The Netman system has been in operation for more than a year and has had a real impact on FPLO's operations. "It reduces the hassle in managing an elaborate network," Randall said. "It provides ongoing, reliable systems information and statistics so that we know what is going on out there all the time."

Airline's hardware upgrade keeps operations cruising

By Abdul Rahman
Special to CW‡

KUALA LUMPUR, Malaysia — Hot on the heels of a $9 million upgrade of its passenger reservations system, the Malaysian Airlines System (MAS) has announced a four-year computer development program estimated to cost an added $14 million.

Earlier this month, MAS implemented its recently-purchased Kosmos-II system, an integrated passenger service system developed by Swissair. The system provides information on all MAS flight schedules, schedules of 300 other airlines, travel data on the 57 cities served by MAS and currency conversions.

MAS is now bringing up additional options of this system, including ticket printing, automatic fare quotations, seat selection, departure control and check ins, weight and baggage control and hotel reservations. It is expected to be fully operational by October.

The newly announced development project will handle some 30 management functions, including the computerization of the airline's cargo operations. This system will also add a passenger revenue accounting system, an engineering and maintenance system and a personnel and payroll system.

MIS manager Ahmad Roedi b. Mohd Razali said much of the money earmarked for the new project will go toward upgrading MAS' existing hardware — an IBM 4341 and two 3031s. MAS has already installed a high-end IBM 3083 mainframe with 16M bytes of memory and 16 communications channels. Razali said he intends to buy two more.

"We are looking at the 3083 series because they can be upgraded to the 3084, giving us speeds up to 27 Mips [million instructions per second]," Razali explained.

The airline did not consider the IBM 4381 for a number of reasons, Razali said. "The 4381 Model 2 can give us only about 2.7 Mips maxi-

> *The newly announced development project will handle some 30 management functions, including the computerization of the airline's cargo operations.*

mum. And we cannot use the Model 3 — the dual-processor unit — because our existing Airline Control Program can't run on a dual-processor machine," he said.

Razali said future purchases at MAS will include an IBM 3900 laser printer, newer models of the IBM 3380 disk drive that can be upgraded for dual-density storage (doubling the existing 2.5G-byte capacity) and some uninterruptible power supply devices.

Information center

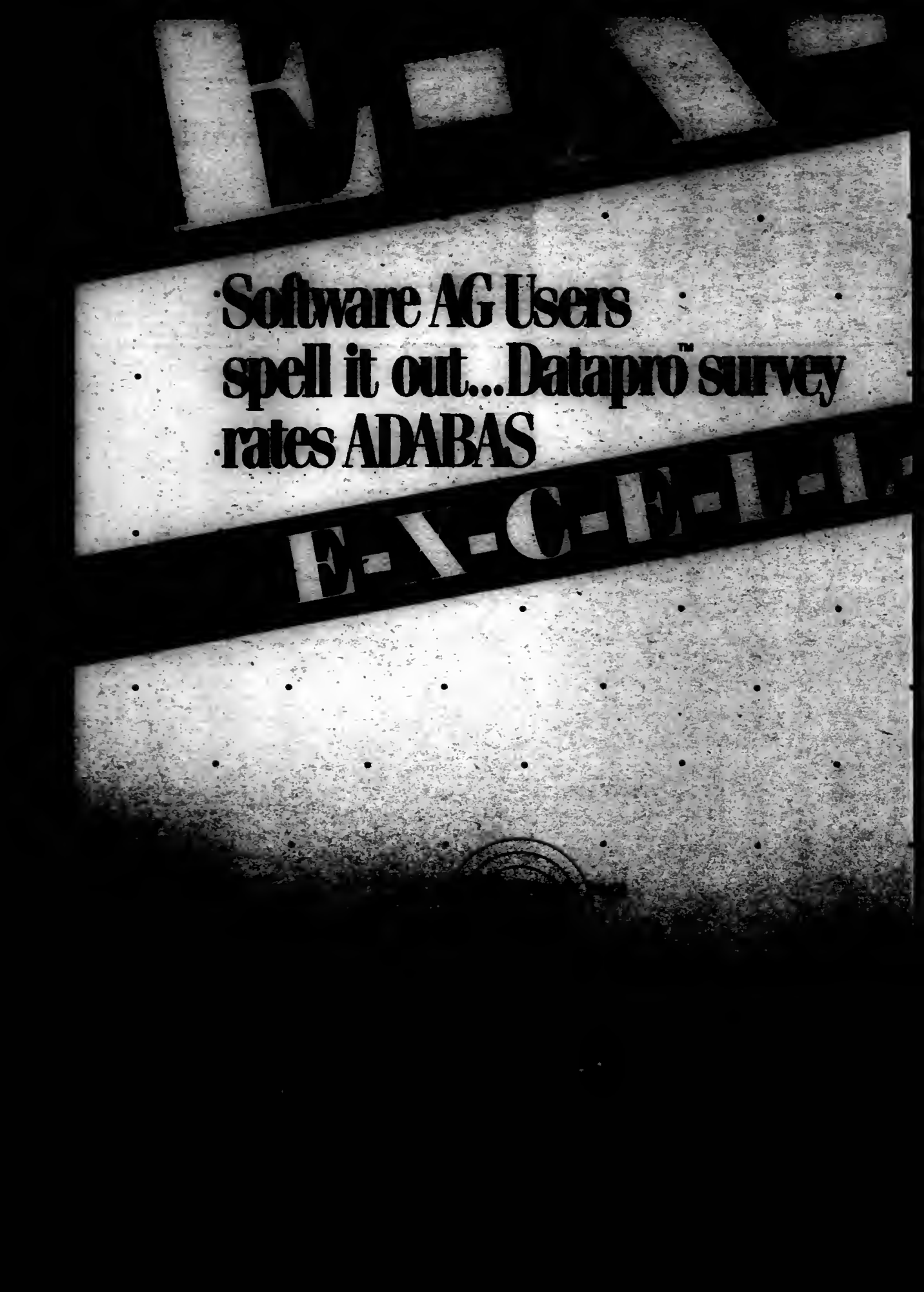
The airline has also recently formed an information center to help introduce personal computers to the company. Ten micros have been installed to date, and 10 more are on order.

The current stock includes seven IBM Personal Computer ATs, which are believed to be the first in Malaysia, and three Wang Laboratories, Inc. personal computers, Razali said.

"The [personal computers] are primarily being used for word processing and spreadsheets, but we are also evaluating graphics packages and micro-mainframe links," he said.

And to encourage computer literacy at MAS, the company has also instituted a computer loan scheme for its staff, Razali concluded.

Rahman is associate editor of The Asian Computerworld, *the Singapore-based sister publication of* Computerworld.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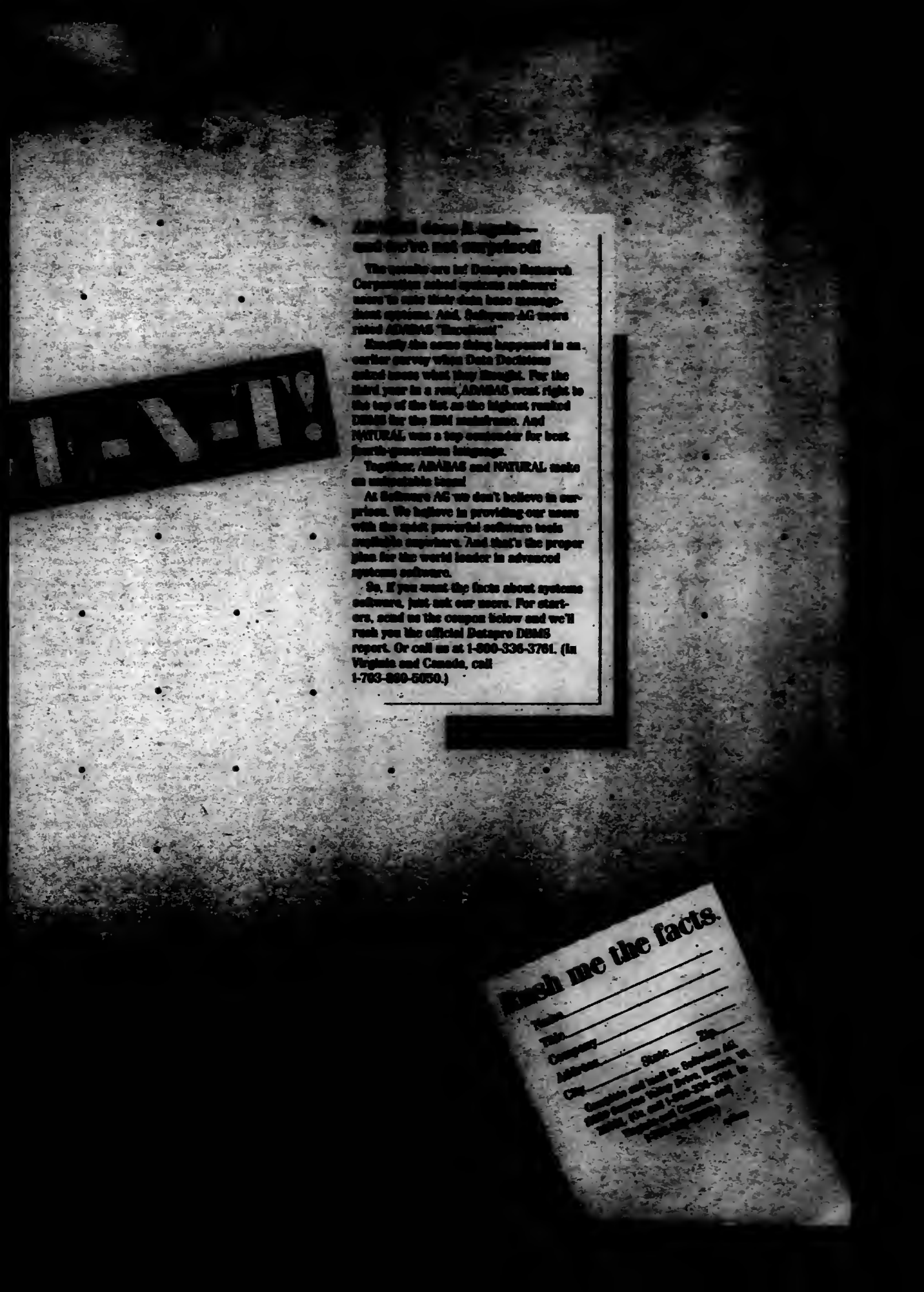
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TURNAROUND TIME
Larry Long

***Q** I am currently involved in developing the structure for the use of part-time, at-home programming resources. No organizations in my area are doing this. I would be very interested in your opinion of such hiring practices and if any organizations have now or in the past been involved in such part-time, at-home work programs.*

This proposed structure is for part-time employees only. Full-time employees will continue doing program development work in the office.

Yau are one of the pioneers in an employment arrangement that I feel will be very popular in a couple of years. At present, companies needing to supplement their programming resources rely on contract programmers. Contract programming agreements are usually between two companies. What you propose is a unique employment relationship between your company and an individual.

Companies routinely hire part-time programmers, but relatively few permit them the flexibility of working at home.

Nevertheless, I think it is a grand idea whose time has come. The personality of programmers has never been to work 8 a.m. to 5 p.m. And programmers often tell me that their allegiance is more to their work than to their company. A self-motivated programmer could be content and probably more productive working at home.

Having praised the possibilities of such an employment arrangement, I should speak to the practicality of implementation. I am afraid that we, as an industry, are going to have to experience the steep part of the learning curve before this type of arrangement can be a profitable reality.

A policy that permits only part-time employees the flexibility of working at home will breed discontent and will eventually backfire. Also, contrary to popular belief, effective programmers engage in considerable personal interaction. This means that some time must be spent on-site.

Then there are the logistical, legal and security considerations. For example, does the company provide the hardware, or does it reimburse the part-time employee for the use of a personal workstation?

In a nutshell, I would recommend that you require that 25% of the work be done on site, that full-time employees be rewarded for exceptional performance with a work-at-home option, that the organization pay pro rata ($300/month) for the usage of a part-time employee's workstation and telephone line, and that you set up rigorous procedures for quality control and time accounting.

***Q** For the last three years, I've shared a cubicle with a delightful and capable programmer/analyst. It is often hard to believe that we work for two different companies. She and other contract programmer/analysts now outnumber our permanent staff, 22 to 17. They attend all company parties and compile on the company's backbreak hours.*

My office mate and I have about the same level of experience, and our compensation level is about the same. She makes slightly more than I do.

My compensation, including benefits and salary, is X dollars. My organization pays the contractor approximately 2X dollars for the same services from my office mate.

Our department has at least a three-year backlog of work. My boss has proposed that we phase out the contractor over the next 18 months and triple the size of our current staff, all while holding the programming budget at the current level. This proposal would result in 50% more programmer/analysts. With this number we could begin some new projects rather than trying to keep everything from falling apart.

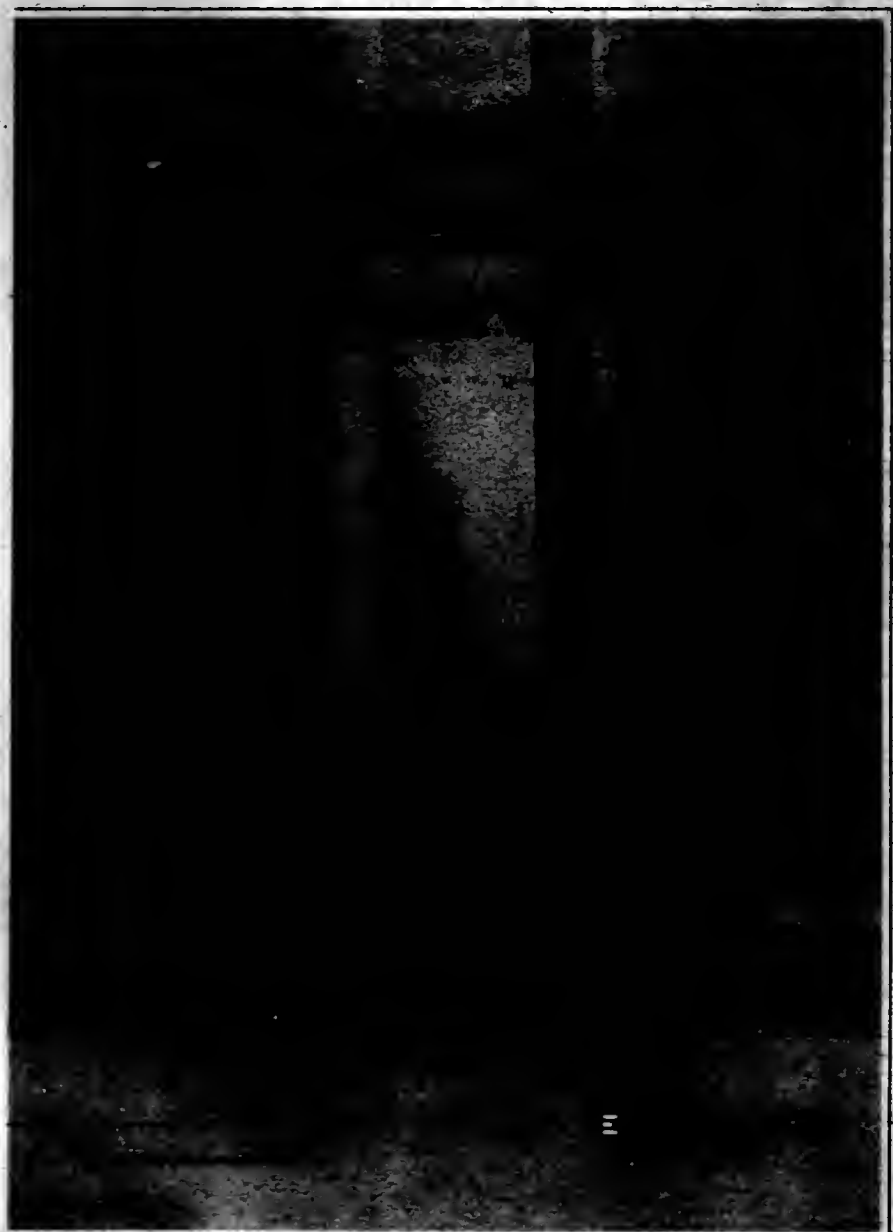
All the proposals to cut back on contractors or increase staff have been turned down. At what point should our company begin to expand its programming staff?

You pay a premium for the flexibility offered by contract programmers. When a company such as yours no longer needs this flexibility, it should consider moving the work in house.

The decision to replace contract programmers with additional in-house people is based more on political considerations than it is on economic or operational considerations. Once hired, the contractor fees become a line item in the budget that can be carried forward without much hassle.

But increasing the internal head count is another question altogether. Even though such a move can be shown to have a positive effect on the bottom line and on responsiveness to users, upper and lower level managers within the organization may be concerned that an inordinate increase in the head count will reflect poorly on personal performance evaluations.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.



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IBM

Vendor support helps timber firm cut upgrade time

SAVANNAH, Ga. — A timber company here credited the support it received from a software vendor with chopping months from its development and conversion efforts during a recent hardware upgrade.

Last summer, the Woodlands Division of Continental Forest Industries (CFI), a subsidiary of the Continental Group, Inc., upgraded its hardware system from four 16-bit Data General Corp. C/330s running under AOS to four 32-bit DG MV/4000s running under AOS/VS.

The firm relied on one of its software vendors, Computer Associates International, Inc., to convert most of its programs. CFI sent one of its senior systems analysts, Tom Jacob, to Computer Associates' office to work out the software conversions for the upgrade with two vendor representatives.

In five days, the team had the software — including accounts payable, general ledger and personnel management modules — ready for installation, a task CFI estimated would have taken at least half a year without the vendor representatives' help. "They saved us a great deal of time," Jacob said.

CFI owns and manages approximately 1½ million acres of timberland throughout the South. It grows and sells trees to sawmills, plywood plants and paper mills to be turned into paper and wood products.

Before the upgrade, rapid system growth at the company had pushed the 16-bit machines to their limits. In the previous two years, CFI had added land and timber management applications, spreadsheet modeling, office automation tools and a number of new users to its system, according to Don Dickerson, CFI's manager of systems and data processing.

The additions to the system caused problems with throughput and response time. "The more we put on [it], the more it slowed down," Dickerson said. Running the firm's payroll application, for example, took five to six hours.

"We knew that to stay productive, we had to expand our data processing capabilities," Dickerson said.

CFI set a rapid schedule for its conversion. "We anticipated paralleling both systems for only about one month," Dickerson said. "That's not only ambitious, it's aggressive." He said the firm was confident that its software and operating system would stand up to the schedule.

According to Jacob, the firm's confidence rested mainly on the support it expected from Computer Associates. "They went beyond the scope of their own products," Jacob said. "They offered to help us convert our whole system. They also offered to convert our system on their own machine at their own office. This demonstrated to us a genuine concern on their part to see us succeed."

Jacob said that besides concern, the vendor representatives offered solid technical advice. One of the representatives was the software developer, and he explained some of the reasons for the program structures and pointed out how changes in portions of the software would affect other parts.

This approach "helped us take a moment to comprehend the new system before the full load of the responsibility was shifted to us," he said. "As a systems analyst, that was important to me. It gave me some breathing room before it was my turn to push the keys."

After the conversions had been worked out at the vendor's office, CFI brought the software to its office and ran it parallel to the old system for three days before letting it run on its own. The new system has fixed the company's throughput and response problems, Dickerson said. The payroll system now takes only half an hour to run.

CFI is currently working on bringing up an accounts receivable package and on interfacing some in-house sales software with the Computer Associates programs. The firm also plans to install a fixed assets module for its system by the second quarter of the year.

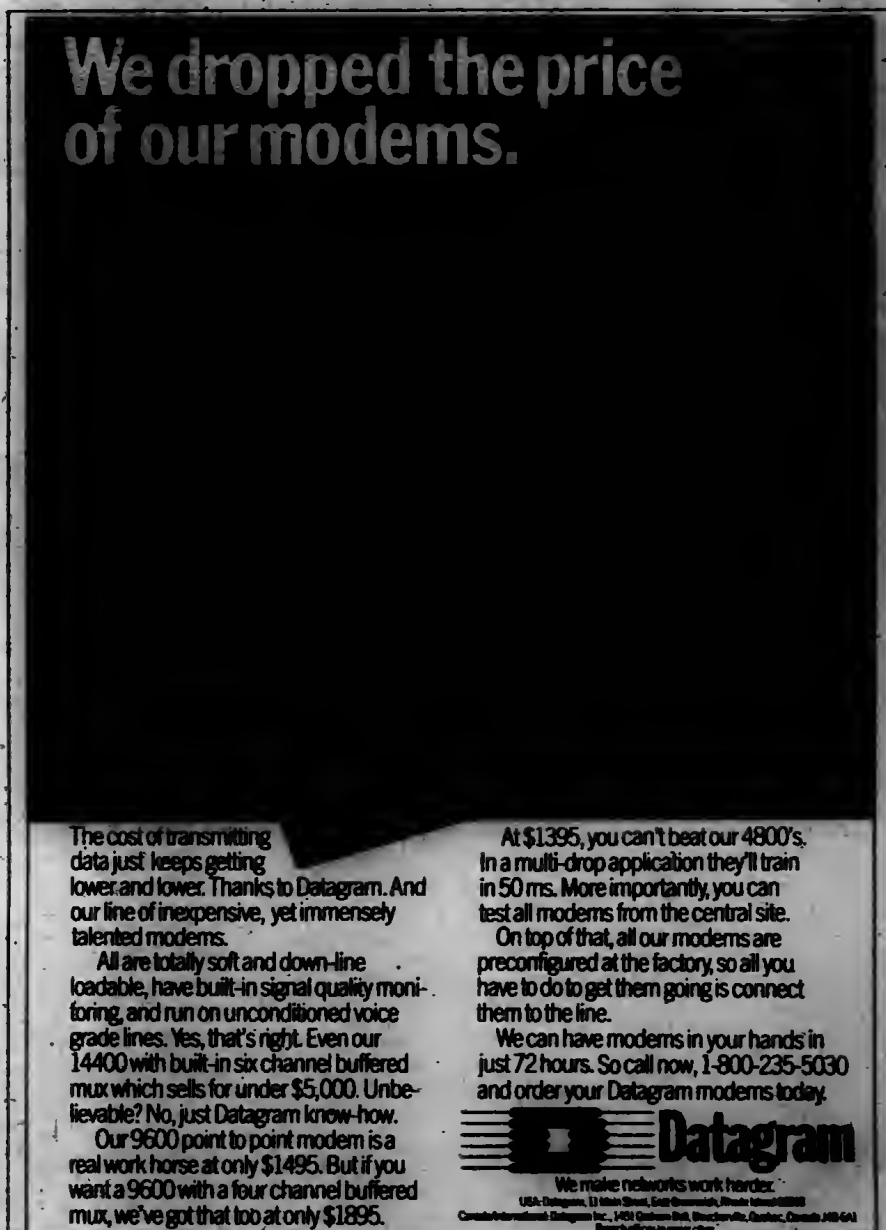
May ACM meet to focus on APL

SEATTLE — The Association for Computing Machinery (ACM) will hold APL '85 May 12-16 at the Westin Hotel here. The topic of the conference and exhibition is "APL and the Future."

The conference — sponsored by ACM, its Puget Sound Chapter and its special interest group on APL (SIGAPL) — will include the presentation of 45 technical papers, four tutorials, seven panel discussions and a variety of optional activities.

Conference fees are $190 for ACM or SIGAPL members, $220 for nonmembers and $55 for students, with discounts available for registering before April 10. Professional development fees are $100 for conference attendees and $125 for nonconference attendees and $50 for students, according to the sponsor.

More information is available from APL '85, P.O. Box 33123, Seattle, Wash. 98133.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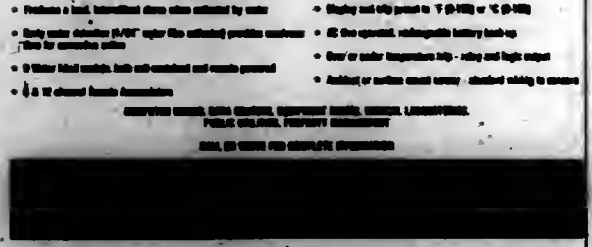

NEWS

CALENDAR

WEEK OF MAY 19

MAY 19-23, NASHVILLE — Software Jamboree. Contact: Software AG of North America, Inc., 11800 Sunrise Valley Drive, Reston, Va. 22091.

MAY 20-21, MONTEREY, CALIF. — How to Manage Data and Information as a Resource. Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

MAY 20-21, FORT LEE, N.J. — CICS/VS Performance & Tuning. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

MAY 20-22, HILTON HEAD, S.C. — Audit Managers Symposium. Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

MAY 20-22, SILVER SPRING, MD. — 1985 Trends and Applications Conference: Utilizing Computer Graphics. Contact: Trends and Applications '85, P.O. Box 630, Silver Spring, Md. 20901.

MAY 20-22, WASHINGTON, D.C. — Vtam Concepts and Facilities. Contact: Acts Corp., 11910 Gate Way, Austin, Texas 78727.

MAY 20-24, HOUSTON — Structured Systems Design Workshop. Contact: Elias Rabaiotis, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

MAY 20-23, VIRGINIA BEACH, VA. — Navy/Micro OA '85. Contact: Boatron Corp., Suite 716, 1511 K St. N.W., Washington, D.C. 20005.

MAY 20-24, BELLEVUE, WASH. — C Programming Workshop. Contact: Kathy Howard, Specialized Systems Consultants, P.O. Box 7, Northgate Station, Seattle, Wash. 98125.

MAY 21-24, PARIS — Intelligentia International Exhibition and Congress. Contact: Sinatec Communications, 211, Rue Saint-Honore, 75001 Paris, France.

MAY 21-22, TARRYTOWN, N.Y. — Technology and Market Forecasting in Electronics. Contact: Futurecast Learning Center, 40 Birch St., Redwood City, Calif. 94062.

MAY 22-23, SAN FRANCISCO — Personal Computer Local-Area Network Software. Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

MAY 22-24, MONTEREY, CALIF. — How to Build and Use a Data and Information Resource Directory. Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

MAY 22-24, WASHINGTON, D.C. — Management Skills and Techniques for New and Prospective Managers. Contact: New York University, School of Continuing Education, 575 Madison Ave., New York, N.Y. 10022. Also being held June 26-28 in New York.

MAY 22-24, KYOTO, JAPAN — International Conference on Foundations of Data Organization. Contact: Yahiko Kambayshi, Department of Information Science, Kyoto University, Kyoto 606 Japan.

MAY 22-24, NEW YORK — Network Protocols and Standards. Contact: Systems Technology Forum, 8609 Ferry Park Drive, Burke, Va. 22015.

MAY 22-24, WASHINGTON, D.C. — Vtam Internals. Contact: Acts Corp., 11910 Gate Way, Austin, Texas 78727.

WEEK OF MAY 26

MAY 28-30, KINGSTON, ONTARIO — 15th Annual Symposium on Multiple-Valued Logic. Contact: H. T. Mouftah, Department of Electrical Engineering, Queen's University, Kingston, Ontario K7I 3N6, Canada.

MAY 28-31, NEW ORLEANS — The Seventh National DEC-Compatible Industry Exposition (Dexpo South '85). Contact: Angela Wright,

See MAY page 38

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NEWS

MAY from page 26

Symposium International, Inc., 26 Princeton-Hightstown Road, Princeton Junction, N.J. 08550.

MAY 28-30, CHICAGO — VS Cobol II. Contact: Syncsort, Inc., One Park Ave., New York, N.Y. 10016. Also being held May 30-31 in New York.

MAY 30-31, SAN FRANCISCO — CICS Application Design. Contact: Syncsort, Inc., One Park Ave., New York, N.Y. 10016. Also being held May 28-31 in New York.

MAY 30-31, NEW YORK — TSO SVC. Contact: Syncsort, Inc., One Park Ave., New York, N.Y. 10016.

MAY 30-31, NEW YORK — CICS Application Design. Contact: Syncsort, Inc., One Park Ave., New York, N.Y. 10016.

MAY 30-30, DALLAS — Opportunities & Pitfalls. Contact: Ken Orton, Future Computing, Inc., 8111 LBJ Freeway, Dallas, Texas 75251.

MAY 30-31, SAN FRANCISCO — Introduction to Data Communications. Contact: Systems Technology Forum, 8008 Fern Park Drive, Burke, Va. 22015. Also being held May 28-31 in Houston.

MAY 28-31, BOSTON — International Conference on Computerization of Medical Records. Contact: Peter Waegemann, The Institute for Medical Records Economics, Inc., 121 Mount Vernon St., Boston, Mass. 02108.

MAY 28-31, WASHINGTON, D.C. — Legal Issues in Acquiring and Using Computers. Contact: New York University, School of Continuing Education, 575 Madison Ave., New York, N.Y. 10022.

MAY 30-31, SAN FRANCISCO — Managers' Roundtable. Contact: Systems Technology Forum, 8008 Fern Park Drive, Burke, Va. 22015.

MAY 30-31, BOSTON — Negotiating Computer Contracts. Contact: Law & Business, Inc., Harcourt Brace Jovanovich, Publishers, 555 Valley Road, Clifton, N.J. 07012. Also being held June 17-18 in San Francisco.

WEEK OF JUNE 2

JUNE 2-5, DALLAS — American Bankers Association 1985 National Operations and Automation Conference. Contact: American Bankers Association, Communications Group, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

JUNE 3-4, BOSTON — Fundamentals of Data Processing for Administrative Assistants and Secretaries. Contact: New York University, School of Continuing Education, 575 Madison Ave., New York, N.Y. 10022. Also being held June 20-21 in San Francisco and June 27-28 in Los Angeles.

JUNE 3-5, MONTREAL — Canadian Information Processing Society Congress '85. Contact: Canadian Information Processing Society, Fifth Floor, 243 College St., Toronto, Ontario M5T 2Y1 Canada.

JUNE 3-5, SAN FRANCISCO — Long-Range Information Systems Planning. Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020. Also being held June 17-19 in Boston.

JUNE 3-6, CHICAGO — DOS/DS (DL/1) Application Programming. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 24-27 in Washington, D.C.

JUNE 3-6, CHICAGO — VSAM From Start to Finish. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 17-20 in Boston and Atlanta and June 24-27 in Los Angeles.

JUNE 3-6, FORT LEE, N.J. — CICS/VS BMS/EDF. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 3-6 in Los Angeles, June 17-20 in San Antonio and June 24-27 in Fort Lee, N.J.

JUNE 3-6, WASHINGTON, D.C. — CICS/VS Applications Design. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 11, 12, 13 and 20 in New York; June 17-20 in Fort Lee, N.J.; and Los Angeles; and June 24-27 in San Antonio.

JUNE 3-6, DENVER — Vsam: Its Structure and How to Use It. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held on June 10-12 in Fort Lee, N.J., and June 24-27 in San Antonio.

JUNE 3-6, LOS ANGELES — CICS/VS Logic & Debugging. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held on June 17-20 in Fort Lee, N.J., and June 24-27 in Atlanta.

JUNE 3-6, NEW YORK — DOS/DC (Data Communications) Programming. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 17-20 in Chicago.

JUNE 3-7, MONTREAL — Montreal International Software Market, MISM '85. Contact: Montreal International Software Market, P.O. Box 1119, Suite 1910, 200, Les Faubourg, Place du Parc, Montreal, Quebec H2W 2P4 Canada.

JUNE 3-7, FORT LEE, N.J. — CICS/VS Internals. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 10-14 in Atlanta, June 17-21 in San Antonio and June 24-28 in New York, Chicago and Los Angeles.

JUNE 3-7, ATLANTA — CICS/VS Application Programming — Command Level. Contact: Technology Solutions, Inc., 520 Fifth Ave., New York, N.Y. 10036. Also being held June 10-14 in Boston, Chicago and Los Angeles; June 24-28 in Fort Lee, N.J., and San Antonio.

JUNE 3-7, MONTREAL — Fourth-Generation Languages: Paths to Productivity. Contact: National Seminar, Canadian Information Processing Society, Fifth Floor, 243 College St., Toronto, Ontario M5T 2Y1 Canada.

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The words above are taken from a 35-page white paper written by Software International, the company whose first general ledger package actually started the applications software industry 15 years ago.

Entitled, "Setting Standards In Mainframe Applications Software," the report may be the first of its kind—the first ever to set down on paper the standards appropriate for application software products.

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EDITORIAL

Opportunity calling

If you sampled the opinions of telecommunications managers on the AT&T divestiture a year ago, they would have likely expressed skepticism at best and, at worst, fear and loathing. We did this at various communications conferences, and this is what we found.

Despite its inherent inefficiencies, the monopolistic communications monolith was, after all, everything in communications most managers had ever known. And at that time, AT&T was mired in lengthy backlogs providing new service installations, so much so that some communications equipment makers like Rolm Corp. blamed sluggish sales on AT&T's inability to quickly provide the phone lines that are the main arteries of private branch exchanges and the like.

Perhaps worst of all, last year's divestiture made clear that managers would face potentially great changes in internal corporate telecommunications strategies. Exactly what changes and challenges, no one knew for sure.

If those same managers were polled again today, they'd likely sing a cheerier tune about divestiture. The reason is opportunity, which came pounding on managers' doors before the smoke of the Jan. 1, 1984, bomb had begun to clear.

Figures compiled by government and private sources show that AT&T is losing some old customers to other long-distance providers in areas where equal access is already in place [CW, April 15]. Apparent cost savings has prompted the customer migration — at least now in early days of divestiture. But when the government has all long-distance providers paying the same for local access, firms like MCI Communications Corp. and GTE Sprint Communications Corp. will simply have to do what they do much better to remain competitive with AT&T — another divestiture side benefit for managers.

But divestiture has significantly and indirectly ushered in a new climate. It appears that telecommunications managers, forced to make at least token changes in deference to divestiture, are generally more amenable to change. The spirit of divestiture is becoming the spirit of dynamism. Managers are becoming less wary of change — especially when it saves their companies money — and communications suppliers are reaching for greater efficiencies than ever before.

Case in point: the four-part series on bypass strategies launched last week in *Computerworld*. Divestiture did not make bypass possible, but the tariff revisions, vendor service and plummeting communications equipment costs it left have given it a big boost. Just ask Bell Atlantic, whose recent study predicted "pervasive" adoption of bypass and the potential demise of large blocks of the former Bell operating companies' businesses.

One recent tariff revision will give large users in particular the chance to see how much of their long-distance bill accrues to AT&T and how much accrues to the operating companies for local interconnect. Knowing the cost of local interconnect, these users can make a clearer cost/benefit analysis of bypass options, which will at least get managers thinking about their options.

Despite the tariff structure's instability and the uncertainty in these early days of divestiture, a new communications infrastructure is taking shape: one in which the range of services is more harmonious with the frenetic pace of business. This infrastructure will be much to the liking of aggressive, nimble telecommunications managers.

Which taxpayer owes the IRS and which is owed a refund?

LETTER

Discrimination still a salary factor

I found the letter "DP salary gap citing called invalid" [CW, March 25] interesting, to say the least. Obviously, the author has been under a rock for a number of years. What else could account for his entire lack of knowledge regarding sex discrimination in the DP job market?

I, for one, have been in data processing since 1958, and *I do* mean programming and analysis. The discrimination I have seen in that time would take weeks to record.

Just to give you an idea of what has gone on and what may still be going on in the DP job market, consider the following scenarios:

■ A female DP professional gets to break in the new chief programmer (male), who is earning $10,000 more a year than she is and doesn't know anything about the system or operations but has been hired to run the show.

■ The woman's boss tells her she cannot be promoted to chief programmer, not because she does not have the qualifications, but because the vice-president in charge of DP doesn't want a woman in that position or in any other position of management if he can avoid it.

■ When it comes to raises in DP operations, men get very generous raises, but women get the bare minimum, and when women should want to know why they are being "shortchanged," they are told that women don't have to work; they are employed as a hobby and therefore should not expect to get equal pay for equal work. But the day a woman hands in her resignation to take a job with another company at a generous increase in pay, just watch

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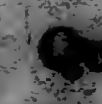
Query DP staff moves with 'up, over or out'



[redacted]
Wang Corp.

It's an otherwise ordinary afternoon. You're busy enough by yesterday's unmet to the point where one of your top programmers "wants to talk." The topic turns out to be "career goals" — thinking that this person thinks it's time to move up, over or out.

First of all, you're lucky. You must have been doing something right in the past or you would have a resignation and one-week notice instead of a talk. Now you have some leverage.

Your first problem is to distinguish between up, over and out. Anyone who loves the work but hates the job is an up or over candidate. The talk of moving out to another company often stems from an employee's lack of perspective. Somebody down in the pit has a completely different outlook, and usually a fuzzy one, on what is available and what is possible. You have the perspective and should have the ability to offer options to someone you want to keep around.

What kind of options? You probably have the most flexibility in the area of assignments. Your best people instinctively recognize the difference between assignments and time on the job. In other words, does Suzy yawn with the company equivalent five years of experience or just the first year's experience repeated five times? Keep the work fresh, and you'll keep the people. You'll also keep the productivity up.

The goals of the employee are important; frankly, they are more important in this context than your goals or the department's goals. Find out what those goals are and match them to what you have available or what you can create.

Sometimes the necessary items there to time in minor, if you will, things — not simple requests for a raise, but consequential demands and veiled threats. This time is an unmistakable "out" candidate. If the quality of the person is truly this person's primary motivation and goal in life, immediately write him a glowing reference and send it anonymously to the headhunter who has been trying to raid your shop or, better yet, send it to your chief competitor.

> **"The goals of the employee are important; frankly, they are more important in this context than your goals or the department's goals. Find out what those goals are and match them to what you have available or what you can create."**

You might wonder whether all of this trouble is worth it. Why not just let this programmer go and find yourself a replacement? That saves you the trouble of translating the assignments. It's cheaper, and besides, it's good, old-fashioned Horatio Savage shiver "not what's been business, isn't it?

All right, Horatio, let's look at some numbers. Suppose that you're paying $2,500/mo ($30,000/year) for this position, exclusive of fixed overhead. You can expect it to cost you at least 10% of the annual salary to fill the position — either in agency fees or employment costs — and holding that employee's position for the personnel department to find someone, or both. That's $4,000. The probability of your hire is going to be [redacted] chief of the work of time. Let's say you [redacted] of the correct combination the first month, [redacted] second, 90% the third and a return to [redacted] productivity level by the fourth month. [redacted] with your existing employees, that's [redacted] of $500, $250 and $125, respectively, for [redacted] first three months, costing you a total [redacted] in reduced productivity alone. The grand [redacted] of your additional cost is now $8,625.

Those numbers are really pretty conservative considering that these costs will [redacted] to employment quickly, that the new hire just [redacted] learn ability and experience and that there is no cost to you in backfilling schedules. Of course, we have assumed that you are allowing the replacement to be the replacement. Couldn't you get away with less?

You might be able to cover 10% or so, but even if you could you'd still be out about $6,250. And worse, it is likely you will have to offer more than the current rate. It would be nice to think even, but that unless you will have to find a $30,000 replacement for a $30,000 position. You simply won't be able to do that unless something is wrong with your existing salary scales. When you look at it this way, it actually is possible to offer your current programmer a modest raise.

At this point, some managers say that "corporate policies" prohibit creating new positions or offering raises. If that is really true, if the policies are really that inflexible, if, as a manager, you are really forced to take responsibility without authority, then there is one last option for you your work. Look in a mirror and recite the following every morning and on modest until you do something about it: "What's it going to be: up, over or out?"

Cicirelli is a senior associate with Nicholas DeMaio Associates in Bryn Mawr, Pa.

Micro madness on the user end finally winds down

[redacted]
Just Store"

At long last, it appears that the widespread syndrome over personal computers in the user sector — illustrated by the hardware and language demands for features and functions for in excess of need or understanding — is subsiding. Such, and more rational DP policies are prevailing.

This trend is illustrated by the following items:

A bright, young business communications and computer user of a computer office system told me that about acquiring a micro machine for personal use: "I have a number of colleagues who have purchased their own systems, some loaded with all the bells and whistles and quite impressive. When I query them on how they are being used and how effective they are, their answers rather astonished me. Oh, it takes more effort to get some work out of it than by not having the machine at all. But they're so much fun to play with, you know, just like at the office!"

A senior systems manager in a large organization offered these comments about personal computer use: "Outside of our user departments with a high degree of political clout put all sorts of pressures on my boss to get me to order personal computers with the works — those same ordering for each member of a group in record numbers. And the fighting words: memory, disks, hard disks, multiple printer ports and most of the fancy-pants programs — every 'hot' item in the industry. I held out for a while, then hunkered under and made the order with the caveat to my boss that in three months those machines would be sitting in the corner gathering dust.

"So guess what?" he added. "Three months later I wandered through the user area — the area that cried most for the machines — and, sure enough, a half dozen of them were sitting in the corner gathering dust."

> **"We can get you a 80% IBM clone with a much faster processor, twin floppy drives, RAM, naturally high-resolution monitor and the requisite printer ports, DOS, Basic, a top-notch word processor and 12-month warranty on parts and labor for a mere $1,495 — and for another $100 we'll toss in a 384K-byte RAM upgrade!"**

For the first time in nearly five years, IBM's profitability fell. An IBM spokesman explained this to a degree in large proportions. After the debacle with the PCjr, there your own conclusions.

A close friend, one who really knows what he is doing in the DP arena, is on the prowl for a new, shiny 16- or 32-bit machine for his own use after being an 8-bit machine aficionado for years. He said, "I am fascinating in personal computer nirvana."

The retailers even have differently giving the staff away. It seems that every week when I check on the latest prices, it's dropped another $50 to $100, or "free" peripherals are offered worth the same amount.

My supplier, who is not even a wholesaler, said, "We can get you a 80% IBM clone with a much faster processor, twin floppy drives, RAM, naturally high-resolution monitor and the requisite printer ports, DOS, Basic, a top-notch word processor and 12-month warranty on parts and labor for a mere $1,495 — and for another $100 we'll toss in a 384K-byte RAM upgrade!"

A computer center director who has his act together said, "With us, the personal computer problem in the mid-user area never existed because we simply would not let it. Our business is such that we must run a tight ship, allowing users to order DP equipment or control the ordering of it in a certain path of a multi-million of resources.

"We evaluate personal computers for our organization the same way we do for any terminal or other business machine destined for a user department. I hope that other DP groups have gotten their personal computer procurement under control, but I doubt it."

Stone is a Washington, D.C.-based independent management consultant, educator and writer, specializing in DP human communications and personnel development.

LETTERS

Some recognition, please

I concur with the column "Technical support staff deserves a fair shake" [CW, March 25]. At last, an MIS manager who understands at least some of the basic problems the technical support members face in their day-to-day chores. Underpaid (yes, it's true — some micro programmers do darn more), understaffed and being forced to work all weekend are just a few of the problems.

I have always preferred to use the analogy of a "cop" to describe my relationship with my peers: No one likes a cop except when you need one. We technical support members are the heroes of the day when we help an application programmer solve a problem, but we quickly turn into villains when we ask the same person why he is using 10,000 tracks for a 2-track file.

Our public awareness campaigns probably need to be refined, but in all honesty, we do give our best shot. This is true with any MIS group that must interface with a user. Our users are educated and know what goes on inside a computer. They cannot be easily fooled with such lines as, "The computer will take care of it." Our users want to know why, but they are usually unwilling to look up the answers for themselves.

My operation strives for 100% on-line uptime. When the 100% turns to 99% we are "down" too much. This causes an unbelievable amount of pressure on the poor souls who have to maintain the MVS, the CICS and the Vtam. There is no room for an error, and if you must make one, make sure it's on Saturday at 3 a.m.

But one should never overlook the positive aspects of the job either. There is nothing like coming in on a weekend to install something new and having the machine to yourself, with all that power at your fingertips and no one asking, "Is it up yet?" To see your installation work is a thing of beauty and great satisfaction. To somehow put all the pieces together and get them to work makes all the hours away from home and all the daily interruptions and frustrations worthwhile.

We are what we are because of the demands made upon us, and it's nice to hear that someone higher in the corporate ladder understands and appreciates our efforts.

Richard P. Tapp
Jamestown, R.I.

Escrow transfer a mistake

In the article "Agent arbitration effective in software escrow gests" [CW, Feb. 11], a fundamental mistake was made in assuming that the "solution to [the software escrow] problem is to have your escrow agreement specify that title in the media be transferred on the execution of the agreement to the escrow agent."

If anything, this is worse, because it creates a different set of problems. It weakens the trade secret claim of the software developer. The developer may have a harder time convincing a judge that the software is a trade secret because it has already sold a copy of the software to the escrow agent. Additionally, if the escrow agent violates any secrecy term, the developer may have no other recourse, because it has already given up rights to the specific copy of the software.

It also assumes a bankruptcy court would not see through the fiction of claiming there is a separation of ownership rights in the magnetic media and intellectual property. I can see no legal reason why a bankruptcy court could not order the escrow agent to return the intellectual property to the bankruptcy trustee while allowing the escrow agent to retain its property: the blank magnetic media.

However, if this dichotomy of ownership interest exists, what happens if the escrow agent itself goes bankrupt? The agreement between the agent and the user can be rejected by the bankruptcy trustee as an executory contract. The developer has no claim (it already sold the agent the copy). The developer and the user could find the magnetic media being sold at a public auction to the highest bidder, free and clear of any contractual claims.

L.L. Bateau
St. Louis

New uptime record claimed

In the column "One year between CPU failure within reach" [CW, March 11], the writer stated he would claim the world record for 4,000 hours without a CPU failure until someone says he's done better. Well, we have done better.

He said his IBM 3083 Model E was installed Dec. 30, 1983, and had not failed as of September 1984. Integon Corp. of Winston-Salem, N.C., installed its 3081 Model G on Oct. 15, 1980, and has not recorded a failure as of March 15.

I claim this world record until, again, someone says he's done better.

James E. Steelsmith
Winston-Salem, N.C.

LETTER from page 40

her current employer offer to match the salary. All of sudden she's worth the money!

Perhaps in the author's next life he can return as a member of a minority and learn how the other half lives.

Judith Bailey
Oakland, Calif.

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SOFTWARE & SERVICES

MSA gives Expert Series tools DBMS support, offers modules

By John Desmond
CW Staff

NEW ORLEANS — Management Science America, Inc. (MSA) has announced that its Information Expert fourth-generation productivity and reporting tools, introduced last year [CW Oct. 1], will support IBM's IMS, Applied Data Research, Inc.'s Datacom/DB and Cullinet Software, Inc.'s IDMS data base management systems.

At the company's Interact users group meeting here, MSA also announced an enhanced release — the MSA Expert Series for Manufacturers — of its manufacturing system software. Added modules in Release 6.2 include advanced inventory management, manufacturing accounting, product costing and purchasing.

In addition, MSA said it plans to market all of its integrated applications software under the label of the MSA Expert Series in market areas including manufacturing, government and health care. According to John P. Imlay, MSA's chairman and chief executive officer, "MSA's plan for the future is to continue to provide software solutions for general business problems while expanding our offerings to specific industries."

The Information Expert products of the Expert Series reportedly enable users to retrieve information from a range of MSA and non-MSA software systems. Information Expert products currently include Information Expert Reporting and Retrieval and the Expert Data Dictionary. Information Expert products designed for screen painting and data base query are still under development, MSA said.

The Information Expert Reporting and Retrieval and Data Dictionary components

See EXPERT page 62

SOFTLINE/JOSEPH CROMLEY

RPG-III ideal for System/38

You are not making full use of the architecture of the IBM System/38 minicomputer if you are using converted software. It is like driving a Jeep on city streets — the machine's performance is not being maximized.

Since IBM's RPG-III language was developed concurrently with, and for, the System/38, the most effective software for that processor is written in RPG-III. A variety of features that makes the Sys-

See RPG-III page 60

Crowley is senior education instructor for RTC Systems, Inc., a North Attleboro, Mass.-based vendor of System/38 software.

- Boeing Computer Services unveiled combined microcomputer-mainframe spreadsheet software for the IBM Personal Computer and IBM mainframes/48
- On-Line Software International linked IBM's Personal Computer and the System/34 and System/36 minicomputers through its Omnilink 34/36/48
- Higher Order Software released a version of its Use.It automated software development tool for IBM mainframes/48
- AGS Computers announced a software development environment that allows users to create, test and debug C programs before compilation/82

INSIDE

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Productivity Aids/82

SOFTALK
John Desmond
CW Staff Writer

MSA gears up for IBM moves

At its recent Interact users group meeting in New Orleans, which attracted some 2,200 users, Management Science America, Inc. (MSA) positioned itself not against oft-mentioned competitors such as Cullinet Software, Inc., McCormack & Dodge Corp. and Walker Interactive Products, Inc., but squarely against IBM.

"IBM is coming," insisted John P. Imlay Jr., MSA's chairman and chief executive officer in an interview with *Compu-*

See MSA page 58

Software aids in machine 'birth'

By Ellen Sutta
CW Washington Bureau

ANNANDALE, Va. — When the Nolans talk about their latest accomplishment — transporting hundreds of programs and records from an IBM 4341 to a newly acquired Digital Equipment Corp. VAX in just one month — they sound like the parents of a newborn baby.

Nolans

CW photo by M. Gerry

Daniel and Barbara Nolan, president and vice-president, respectively, of Heuristic Developments, Inc., based here, even went so far as to send cards announcing that their VAX-11/750 "baby" was "born" March 25 at 2:25 a.m., measuring 60 in. long and weighing in at 1,005 lb.

The hardware conversion, the card noted, was made possible by the use of Adabas, a relational data base management system (DBMS), and the Natural fourth-generation programming language, as a bridge from the IBM to the VAX. Both software products are from Software AG of North America, Inc., based in Reston, Va.

"We actually moved systems from an IBM to a VAX with no apparent changes [or problems]," Nolan said. "That means that our VAX users can utilize the elaborate software that was running in the IBM environment."

"In theory," he explained, "a fourth-generation language coupled with a relational DBMS should make the type of computer [being used] a trivial matter. What we did is put that theory into practice, and we found that it is true."

Nolan said all the IBM source programs and applications were written in Natural and all the files were under Adabas control. Drawing on some 20 years of experience and planning, he used Natural

See NATURAL page 60

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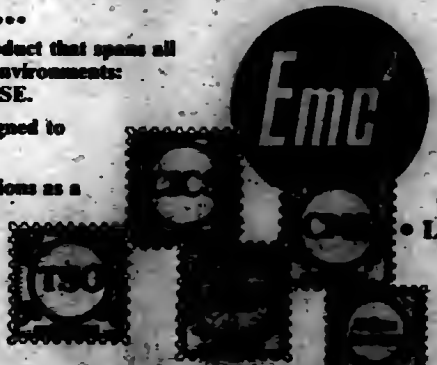

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SOFTWARE & SERVICES

Data base tools released

DOWNERS GROVE, Ill. — Consumer Systems Corp. has announced Databasic-II programmer productivity software that reportedly allows nontechnical users to perform data base functions with the IBM DL/1/IMS data base.

Databasic-II accesses data bases without control blocks or a special data dictionary, a spokesman said. A structured programming facility menu allows the user to control access to the 17 functions of Databasic-II, according to the vendor. Functions include subsetting, printing with Cobol field names and loading, unloading and comparing utilities.

The product allows users to create extract files of DL1/IMS data bases, produce before and after comparison reports, create new data base segment data, correct invalid numeric data fields and produce reports using 30-char. Cobol field names.

With a subsetting function, Databasic-II extracts user-selected data from any DL1/IMS data base family and delivers it to a test file. The subsetting function allows data base subsets to be based on specific keys, generic keys, nonkey fields, a portion of a nonkey field or percentage of a data base with no special prework. The compare function produces a difference report with only the inserted, deleted and changed segments. The output can be produced with Cobol field names for verification of test results.

Databasic-II is priced at $32,000 for a perpetual license in IBM OS environments.

For more information, Consumer Systems is located at 1100 31st St., Downers Grove, Ill. 60515.

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BMC rolls out Loadplus IMS reload utility

SUGAR LAND, Texas — BMC Software, Inc. has announced Loadplus, which is said to allow IBM IMS installations to reload IMS data bases more rapidly.

A spokesman said Loadplus is a replacement for IBM's IMS Hierarchical Direct Reorganization Reload utility. Loadplus does not require any changes to JCL or applications. Data bases created with the product are identical to those created by the IMS utility, with logical relationships, secondary indices and data base recovery control fully supported.

In addition to improving processing efficiency, Loadplus is said to give IMS users more control over data base free space for better data base tuning. It supports error-handling options that can prevent production run failures. The product features a Load Program Interface that allows an application, written to load a data base in the standard manner with IBM's DL/1, to use the facilities of Loadplus instead. Changes to the application source code are not required.

Loadplus supports all releases of IMS running under any release of IBM's MVS. It is priced at $18,500 for a permanent license. Loadplus can also be leased for $625 per month.

BMC Software can be reached through P.O. Box 2002, Sugar Land, Texas 77478.

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All of our synchronous terminals are compact, modular and IBM 3270 compatible. The E4540 data terminal, for example, comes with a choice of displays, keyboards, controllers, printers and cabling methods.

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To learn why the last word in data terminals is AT&T, call 1-800-247-1212.
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Use.It out for IBM hosts

CAMBRIDGE, Mass. — Higher Order Software, Inc. has announced that its Use.It automated software development tool is now available for IBM mainframes.

Use.It is said to allow systems developers to create specifications in graphical format with a graphics editor. The system automatically analyzes the specifications to detect logical errors. When error correction is complete, Use.It automatically generates program source code.

Already available for the Digital Equipment Corp. VAX processor environment, Use.It is now available for IBM mainframes under IBM's MVS using Cobol. Interfaces to IBM's IMS and CICS are available.

Use.It implements the firm's mathematical Software Development Methodology to reduce the incidence of logical errors. The system allows the developer to run prototypes of systems descriptions at any stage in development to verify systems operation. The product also generates all documentation for the developed system. Maintenance can be done by changing specifications and regenerating code, including documentation, to match the restructured specs.

Use.It for the IBM mainframe environment costs $95,000 for a perpetual license.

Higher Order Software is located at 2067 Massachusetts Ave., Cambridge, Mass. 02140.

Boeing Computer unveils micro-mainframe spreadsheet

VIENNA, Va., — Boeing Computer Services Co. has introduced combined microcomputer and mainframe spreadsheet software that allows users to create spreadsheets on micros and upload them to the mainframe, where they can be merged into a centralized corporate spreadsheet.

The Boeing Calc spreadsheet software is reportedly available for IBM 4300 and 3030 series mainframes under IBM's MVS/TSO operating system and for the IBM Personal Computer XT and AT. Boeing Calc provides for the use of on-line host storage, allowing users to create spreadsheets with a maximum size of 20M bytes.

Boeing Calc can read standard Software Arts, Inc. Document Interchange Format files and work files in Lotus Development Corp.'s 1-2-3 spreadsheet package. The product is available for use with stand-alone micros, on multiple personal computers in a local-area network or in a micro-mainframe configuration.

Boeing Calc costs $300 per copy for the micro and $6,250 for the micro-mainframe package, which consists of both the personal computer version and the mainframe module.

Boeing Computer Services is located at 7990 Gallows Court, Vienna, Va. 22180.

IBM System/34, 36 tied to micros with Omnilink

FORT LEE, N.J. — On-Line Software International, Inc. has introduced communications software that allows data to be selected and retrieved from IBM System/34 and System/36 minicomputers and transferred to IBM Personal Computers and compatibles.

A spokesman said Omnilink 34/36 allows users to select and sort data from as many as 16 minicomputer files simultaneously. Data can be transferred to the microcomputer after selection or saved and transferred when needed. Omnilink 34/36 also offers tools that allow users to integrate downloaded data directly into a spreadsheet or other micro software.

Included with the product is the company's Executrieve query system, its File Reformatting Facility and its Data Entry system for the IBM Personal Computer. Data Entry provides screen design features that enable users to create and maintain micro-based applications. The File Reformatting Facility provides automatic data reformatting with a variety of micro packages. Executrieve is an ad hoc query system that enables users to access micro files with English commands.

Omnilink 34/36 features 10 levels of security for dictionary, data field, procedure and function levels. Users can define access to data dictionaries and what data fields can be transferred, the spokesman said.

Omnilink 34/36, including one copy of Executrieve, Data Entry and File Reformatting, is licensed for $3,750.

On-Line Software International is located at Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

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The Towers are all powered by Motorola microprocessors (the regular Tower by the 68000, the XP and Mini by multiple 68040's).

Other state-of-the-art features include Winchester hard disk and the Intel Multibus.* Not to mention an error-correcting memory

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Development aid tests C programs before compiling

MOUNTAINSIDE, N.J. — AGS Computers, Inc. has announced an applications development environment for the C programming language.

A spokesman said Smart/C allows users to create, edit, test and debug C programs before they are compiled. With Smart/C, users can develop a program, have the program interpreted, suspend interpretation, edit the program and resume interpretation without reloading files.

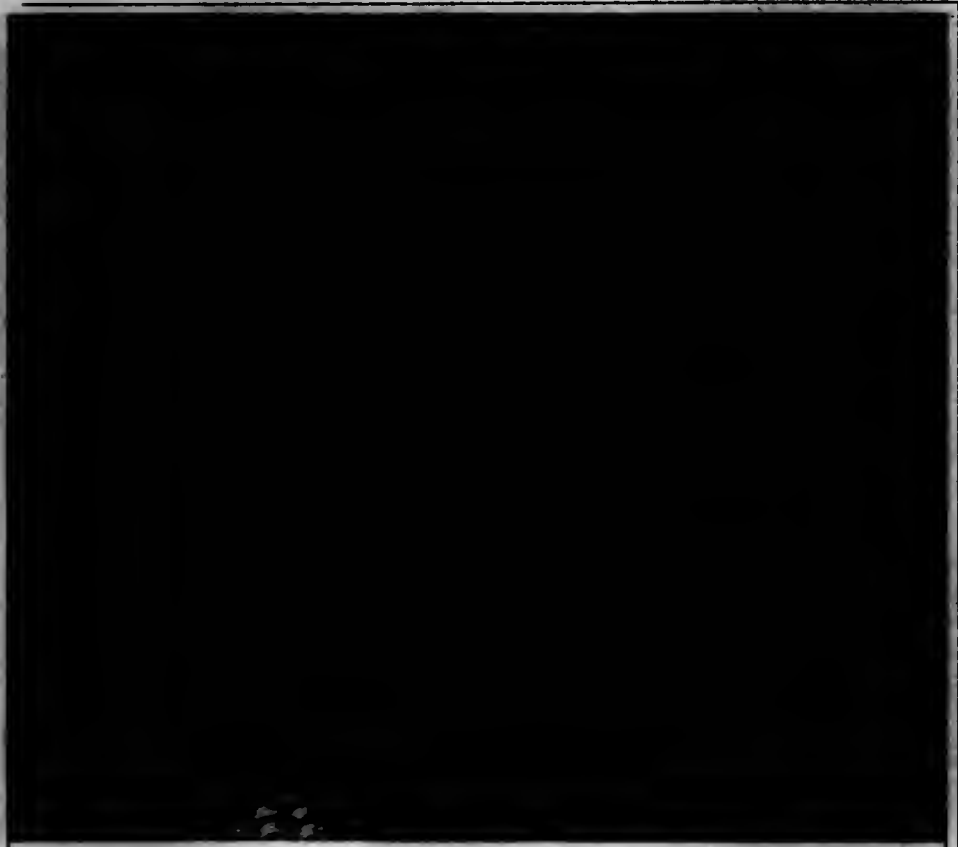
The product consists of an Environment portion and a Migrator portion. Environment facilitates syntax-directed editing and interpretation of C source code and prompts users to enter appropriate syntax elements. Once the program has been created and tested, it can be sent to any chosen compiler.

Environment output consists of C language Ascii files compatible with most C compilers, the spokesman said.

Migrator reportedly allows C programs not developed under Smart/C to use its editing and debugging capabilities. It takes C language Ascii files and translates them into forms that can be used by the Environment portion. Testing can be done on a module-by-module basis.

According to the vendor, Smart/C is available on a range of systems from personal computers to minicomputers running versions of AT&T Unix, including Microsoft Corp.'s Xenix, University of California at Berkeley BSD 4.2 and Unix System V, Release 2. It also runs under Microsoft's MS-DOS operating system. Prices range from $600 for the IBM Personal Computer version to $10,000 for Digital Equipment Corp.'s VAX 11/780 running Ultrix.

AGS Computers is located 1139 Spruce Drive, Mountainside, N.J. 07092.



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SYSTEMS SOFTWARE

■ **Software Information Services, Inc. has introduced a program generator for IBM mainframes under OS.**

Protool/Online produces IBM CICS Basic Mapping Support screen mapping source code and CICS command-level Cobol source programs, a spokesman said. Both the CICS screen maps and the Cobol programs are standardized in both logical structure, format and coding standards.

Protool/Online is designed for non-CICS programmers executing conventional online inquiry and update programs. The product includes a screen painting program for designing screen layouts.

Protool/Online costs $2,995.

Software Information Services, 901 Birch Hill St., Thousand Oaks, Calif. 91320.

■ **Ken Orr & Associates, Inc. has introduced an enhanced version of its Structure(s) program design software that is said to offer improved performance through better utilization of available memory and refinement of the Cobol code generator.**

The package reportedly features a 50% increase in the maximum number of conditional statements supported and the addition of a status page listing the number of errors, warnings, messages, sets and values that have been used for options.

Version 3.4 is priced at $10,000 for a perpetual license. The vendor's Structure(s) Code Generator is priced at $5,000. The combined package costs $12,500. Current Structure(s) users under contract will receive Version 3.4 free of charge.

Ken Orr & Associates, 1725 Gage Blvd., Topeka, Kan. 66604.

■ **Landmark Systems Corp. has introduced Version 6.1 of its IBM CICS monitor for IBM's MVS, OS/VS1 and DOS operating systems.**

The Monitor for CICS Ver-

Continued on page 88

If you know corporate software, you know that only three companies are really capable of offering a "total solution" product line. Everything from general ledger to a PC link with your mainframe.

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Our recommendation to shop the big three is offered with confidence. And with certainty that once a competitive evaluation ensues, the chance of your choosing McCormack & Dodge easily exceeds one in three. Because, not long after you begin your analysis, the differences will become apparent. Differences in what each company actually means when it claims to have a total software solution, and a totally integrated software line.

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Available with standard and reduced size displays, 4-color capability and 80 or 132 column formats, the 5540 can be tailored to your specific needs. And, each display has a smudge-resistant, non-glare, high resolution tilt screen.

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SOFTWARE & SERVICES

Continued from page 82

sion 6.1 now includes an on-line index that allows transaction data from previously run CICS programs to be reviewed on-line. When the system abends, Version 6.1 generates collection records for all transactions in the system at the time of the abend, a spokesman said. When the system is restarted, data from the prior run can be displayed and the transaction that was active when the abend occurred can be identified.

The product also includes increased capacity for batch reports, on-line exits that allow users to access collection records before they are written, capabilities for exclusion of selected transactions, suppressed printing of cover pages on reports and generation of a selected fields summary. The Monitor for CICS Version 6.1 also includes command-level return codes.

The Monitor for CICS Version 6.1 costs $16,000 for MVS and OS/VS1 systems and $8,000 for DOS.

Landmark Systems, 19570 Club House Road, Gaithersburg, Md. 20879.

■ Software Partners/32, Inc. has introduced Tapesys 3.0 for Digital Equipment Corp.'s VAX systems.

According to the vendor, Tapesys 3.0 includes maintenance facilities for a VAX tape library, an automatic system and user backup and restore procedure and a first-in/first-out scratch pool for recycling tapes.

Tapesys 3.0 allows users to query the system for files, save sets and reel numbers, a vendor spokesman said. An on-line directory and inquiry facility provides a history of cataloged files. Tapesys reportedly uses a VMS Backup function that ensures standard tape creation from one VMS site to another.

Built-in tape volume accounting for allocating tape library costs are included. Capabilities for alphanumeric tape identification are also provided.

Tapesys 3.0 is priced from $3,200 to $6,500, depending on processor.

Software Partners/32, Suite 11, 18 Rogs Drive, Peabody, Mass. 01960.

■ Communications Research Group, Inc. has announced that its Blast communications software now runs on Prime Computer, Inc. minicomputers and mainframes.

Blast allows Prime users to transfer data to and from computers from other major vendors running Blast software, a spokesman said. The product reportedly allows asynchronous data transfer among minis, micros and mainframes via modems and dial-up connections through RS-232 ports, without add-on boards.

For Prime users, Blast prices range between $495 and $895 for minis and start at $2,495 for mainframes.

Communications Research Group, 5929 Jefferson Highway, Baton Rouge, La. 70809.

■ Catalytix Corp. has announced the Safe C interpreter for the execution of C programs under AT&T Unix and Microsoft Corp.'s MS-DOS operating systems.

Safe C does not require any alterations to or special formatting of a C program, the vendor said. It can be used in conjunction with existing development utilities, such as editors, window managers and program analysis tools. It reportedly allows breakpoints to be set into the source code, the values of variables to be displayed and modified and the program to be "single-stepped."

The price of the Safe C interpreter ranges from $400 for MS-DOS running on the IBM Personal Computer to $4,000 for use with the Digital Equipment Corp. VAX-11/780.

Catalytix, 55 Wheeler St., Cambridge, Mass. 02138.

■ McHugh, Freeman & Associates, Inc. has announced enhancements to Version 2.4 of its Menu/Authentication Processor System (M/APS) for Digital Equipment Corp. VAX processors under VMS.

M/APS, which provides secured access to system applications, now executes VMS command files and provides access to command procedures and to many VMS utilities. It also performs terminal identification and manages terminal I/O.

M/APS Version 2.4 costs $1,500.

McHugh, Freeman & Associates, 1135 Legion Drive, Elm Grove, Wis. 53122.

■ DGC, Inc. has introduced system software for the IBM System/36 minicomputer.

According to a spokesman, Qryz2 offers users capabilities to enhance System/36 job descriptions, physical and logical files and system values. The product includes 18 functions, 15 System/36 commands and three System/36 subprograms.

An RPGINDENT command provides indented listing of Do and If groups within IBM RPG programs, while an SCELIST command will list any or all members within a source file in a single batch job. Qryz2 includes subprograms that can be called from any System/36 high-level language. A subprogram called Menv can return a character string representation for a specified numeric value. Qryz2 sells for $695.

DGC, 1400 Preston Forest Sq., Dallas, Texas 75230.

■ Gajac, Inc. has introduced an enhanced version of its resource management and charge-back system for Digital Equipment Corp. VAX under VMS Version 4.

Arsap Version 4.07 is designed to control data center operations. Arsap can produce itemized invoices for al-

Continued on page 88

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MSA from page 45

Isrvworld. "They're going to be in our business, and we need to prepare for that."

'Going into every phase'

Imlay predicts that IBM's Information Programming Services division will be competing against MSA in the applications software market within four years, once it develops the appropriate products and gears up the required marketing and support forces. Imlay referred to IBM's stated goal of becoming a $185 billion company by 1994 — up from $47 billion last year — and said, "We know they are going into every phase of computing."

Statements of direction by MSA executives at Interact illustrated the strategy the giant applications software company, which boasted some $140 million in revenue last year, has adopted for meeting its existing and anticipated competition.

Dennis Vohs, MSA's executive vice-president, outlined five directions for the Atlanta-based firm, the first being a commitment to a "data base-orientation" in all MSA applications. Vohs said MSA is committed to supporting IBM's IMS, Applied Data Research, Inc.'s Datacom/DB and Cullinet Software, Inc.'s IDMS data base management systems. Vohs said IMS is the leading DBMS in use by MSA customers, with IDMS second and Datacom/DB third and gaining ground.

Later this summer, Vohs said, MSA will announce its strategy with respect to supporting IBM's DB2. The strategy will depend on whether IBM markets DB2 as an information center-type DBMS or as a production system. "The [key] word is production," Vohs said.

No MSA DBMS

Vohs offered two primary reasons why MSA has chosen not to offer its own DBMS. First, he said, attempting to market an MSA DBMS would alienate IBM salesmen who currently help MSA in many ways. Second, and more important, IBM could decide to bury key portions of IMS and DB2 in microcode on future processors, leaving the IBM-compatible DBMS vendors "out in the cold." He pointed to the use of microcode on the recently announced Sierra processors as evidence of IBM's direction.

> *'[IBM is] going to be in our business, and we need to prepare for that.'*
>
> — John P. Imlay Jr. MSA

Vohs said MSA will provide both on-line systems, in which data is entered from a terminal and the data base is updated at intervals, and real-time systems, in which the data base is updated instantly.

Vohs said that because it costs more to process in real-time, users will need such combined systems.

Plans to strengthen link

MSA is committed to ensuring that its programs are functionally integrated, Vohs said, so that applications can share data and allow, for example, one function to reconcile accounts payable, payroll and general ledger modules simultaneously. MSA plans to strengthen further its micro-mainframe link product, Expert Link, to allow users to decide whether processing should occur on the host or on a personal computer. "We want to allow [users] to make that decision," Vohs said.

Imlay predicted that by 1995, 90% of all corporate processing will be performed on microcomputers linked to a host. With Expert Link, MSA plans to provide data downloading to micros for all its applications, distributed data entry capabilities and shared host-micro software applications.

"We are selling off the retail side of our micro software business while concentrating on the micro-mainframe link side," Imlay said, referring to MSA's sale of three of the four micro software divisions obtained in its unprofitable acquisition of Peachtree Software, Inc.

One micro supported

MSA has no plans to support any micro except the IBM Personal Computer with Expert Link, Vohs said. Only if Apple Computer, Inc.'s Macintosh achieves more penetration into the corporate world will MSA spend any money trying to accommodate it in the micro-mainframe link, he said. Nor does MSA have any plans to provide for AT&T Unix-based micros in its link, according to Vohs. He predicted that the AT&T machines will someday operate under both Microsoft Corp.'s MS-DOS and Unix simultaneously, making a pure AT&T Unix link unnecessary. And he added, "We do not know if large corporations will accept [AT&T Unix] on desktop computers."

Finally, MSA plans to provide a common user interface to its applications through its Information Expert fourth-generation productivity and applications development tools.

To protect user investment in applications software, MSA allows Information Expert to be used against "foreign" data bases of either in-house products or MSA's competitors' products.

The company's presentation of its strategic directions, including the focus on Information Expert tools, was slick indeed — complete with a New Orleans marching brass band and a multimedia marketing show. If that strategy was formulated as carefully as the Interact users group meeting, look out for MSA.

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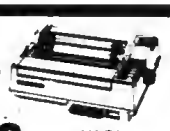

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to meet on the Meridian.

NATURAL from page 45

to write the utilities, or bridges, that transferred the programs and files from the IBM to the VAX, which was also running Adabas and Natural.

"I wrote the utilities in Natural and simply pointed them at either the IBM or the VAX, depending on which machine I was [using]. It minimized the differences [between the hardware]. I did not have to code anything in VAX- or IBM-specific code," Nolan said.

Moreover, he said, the whole process — from the placement of the order for the VAX to the start-up of an operating system with 1,676 programs and 250,000 records — took only one month.

"Everybody said we would not be able do that in even six months," he said.

"When we told the [DEC] users group [members] about this, their mouths just dropped open," Barbara added.

Heuristic Developments is a software development company that specializes in applications customized to individual client operations.

> *'When we told the [DEC] users group [members] about this, their mouths just dropped open.'*
>
> — Barbara Nolan
> Heuristic Developments, Inc.

The firm needed a VAX to undertake development projects in-house, rather than relying on client machines that often ran too slowly and were tied up with high-priority production jobs, Nolan explained.

To bring the VAX up quickly, he relied on the same unconventional approach to software development that he employs for clients. Called the heuristic or natural approach, it stresses flexibility over initial design precision [CW, Aug. 3, 1981].

For example, instead of going through a lengthy process to create a precise system design document, Nolan begins with a rough design plan and then undertakes development and installation work as soon as possible in order to discover and address user requirements and problems.

This learn-as-you-go process also involves users in all phases of the software development, he added.

RPG-III from page 45

tem/38 a high-productivity tool are lost if software written in other languages or converted from other hardware is used on the System/38.

The way the System/38 functions explains why RPG-III software, rather than home-grown or adapted code, makes use of the System/38's capabilities more effectively. System/38 architecture provides sophisticated functions that are an integral part of the processor's firmware.

For example, System/38 files are constructed using logical views. Information can be retrieved from the data base in a variety of formats and sequences. In addition, information can be updated through one logical view and the results immediately made available to multiple users through other logical views.

Consistency

Thus, speed of update and ease of inquiry are two key System/38 features that are lost if converted code is used rather than RPG-III. Major user complaints regarding converted IBM RPG-II code are that the machine runs slower and less efficiently and that System/38 features such as Query are bypassed, which reduces the system's functionality.

Converted code is especially inefficient because it does not utilize the System/38's built-in data base management system. The DBMS, designed for use with RPG-III coding techniques, is actually part of the system — not add-on software. It conceptually eliminates flat files through externally defined data elements that are stored only once, eliminating redundancy. Old programs converted from other hardware have program-defined files that will not utilize the externally defined file advantages that are such a big part of the System/38 DBMS.

Thus, the high-productivity, high-utility potential of the System/38 is lost whenever converted-code software is employed. Software programmed for IBM's 370 series, System/34, System/36, Hewlett Packard Co.'s HP 3000 and other processors was specifically designed to use features of those machines. To convert such programs to the System/38 ignores features that IBM's Futures Project built into the system.

Advantages now clear

One reason interest in the System/38 has been slow in building is that true RPG-III software is only now becoming available. When IBM introduced the System/38, the only software available was converted RPG-II programs. It has taken several years for software in the newer language to be developed. But with the increasing availability of RPG-III applications, the productivity advantages of the System/38 are now becoming clear.

RPG-III uses fewer indicator entries than RPG-II because an RPG-III indicator can condition self-contained groups of statements. It also supports subfiles and data areas and has other programmer and user conveniences. Because System/38 features are married to RPG-III, it is the fastest language for coding and the easiest to maintain.

While it would be stretching a point to describe current superminis and mainframes as user friendly, the System/38 running RPG-III software is a major step toward that goal.

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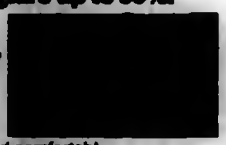

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*National Institute For Occupational Safety and Health Study, August 1981.

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SOFTWARE & SERVICES

Continued from page 88

locating costs of computer resources to internal departments, projects, users, contracts and grants. It can be used for departmental budgeting, to control project costs or to bill time-sharing customers, a spokesman said.

On-line project switching allows projects to be changed from within batch or command files. System managers can track usage of proprietary software packages and transactions performed from a batch or command file, the spokesman said.

Armap for VMS is licensed for $4,995.

Gajac, P.O. Box 188, Riverdale, Md. 20737.

■ Boston Systems Office has introduced a file transfer system for Digital Equipment Corp.'s PDP-11-based development systems.

BSO/Com-1 is said to facilitate the transfer of source and object files from DEC PDP-11 computers to and from Intel Corp.'s Intellec and Motorola, Inc.'s Exorciser microprocessor-based development systems.

A spokesman said the bidirectional communications facility allows an engineer to develop programs on a PDP-11 and then transport the debugged software to the microprocessor-based system for software/hardware integration.

BSO/Com-1 runs under DEC's RSX-11M Version 3.2 or higher and RSX-11M+ Version 1.2 or higher. The product costs $800.

Boston Systems Office, 469 Moody St., Waltham, Mass. 02254.

■ Cap Gemini Dand Corp. has announced the S34 3GRF on-line screen handler for translating 3GRF screens on the IBM System/34 and System/36 to CICS screens on the 4300, 3080, 3090 and 3080 series processors under VSE or MVS.

The screen handler runs in conjunction with Cap Gemini's RPG/RPG II-Cobol translator. The S34 3GRF translates RPG programs to CICS command-level Cobol programs and basic mapping support maps.

A perpetual license for the S34 3GRF and the RPG/RPG II-Cobol translator costs $34,900.

Cap Gemini Dand, Suite E-1A, 9160 Red Branch Road, Standard Court E., Columbia, Md. 21045.

PRODUCTIVITY AIDS

■ ASE Services, Inc. has announced the System/36 Utilities Package for the IBM System/36, with tools aimed at improving productivity.

A spokesman said features of System/36 Utilities Package include menus with advanced functions; help text entry and display; spool file control; computer-aided design for menus, screens and reports; interactive system simulation; printed systems specifications; enhanced object manipulation; cross-reference and search utilities and debugging aids.

System/36 Utilities Package, written in IBM's Control Program Facility, costs $2,500 to $3,500.

ASE Services, 58 Hamlet Ave., Woonsocket, R. I. 02895.

APPLICATION PACKAGES

■ Business Software Technology, Inc. has announced Run Time Evaluator (RTE) software for performance analysis with Outlinet Software, Inc.'s IDMS and IDMS/R data base management systems.

According to a spokesman, RTE provides facilities for IDMS/R runtime performance evaluation and tuning, IDMS/R applications chargeback and billing and IDMS/R resource use analysis. RTE also provides performance statistics for on-line tasks, batch jobs and IBM CICS transactions.

Compatible with IDMS Release 5.7 and IDMS/R Release 10.0, RTE costs $7,500 per CPU.

Business Software Technology, 950 N. Main St., Randolph, Mass. 02368.

■ Al Lee & Associates, Inc. has introduced a Westinghouse Corp. Teleprocessing Interface System (Westi) teleprocessing monitor version of its Magec applications development system.

A spokesman said Magec includes capabilities for applications generation, on-line production of documentation for generated applications, on-line security features, audit trails and activity logging.

The Westi version of Magec costs $28,000.

Al Lee & Associates, 2324 Snelling Lane, Dallas, Texas.

EXPERT from page 45

are currently available for IBM CICS and Vsam sites at no cost through maintenance agreements. For Cullinet IDMS users, the Information Expert tools are currently available only with MSA's human resource software. For $50,000, MSA said, users can obtain a logical interface module that enables the Information Expert products to work with in-house and third-party software.

Features of the advanced inventory module of the Expert Series for Manufacturers include lot tracing, random storage, inspection control, allocation and kit picking and cycle count control.

The manufacturing accounting module reportedly estimates the cost of completing an order, tracks actual costs, analyzes variances from estimates, accounts for orders and inventory and supplies financial information from the production area to the financial systems.

The purchasing module provides capabilities for processing requisitions, vendor quotations, purchase orders, receipts and inspections. The module is integrated with a requirements planning module to provide a long-range view of material needs, a spokesman said.

Pricing for the Expert Series for Manufacturers ranges from $100,000 to $500,000. The manufacturing system runs on IBM mainframes and compatible processors under IBM's DOS or OS operating systems.

MSA is located at 3445 Peachtree Road N.E., Atlanta, Ga. 30326.

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IN DEPTH

Executive Interview

Jim Sutter
Rockwell International

By George Harrar
Senior Editor, Features

Rockwell International Corp., maker of bombers, space shuttles, satellites, truck axles, newspaper presses and much more, is a $9.4 billion company heavily reliant on information systems for engineering design.

Jim Sutter oversees five worldwide data centers and the pure SNA network linking them and 33,000 end users. Rockwell is a strong IBM shop that has thrust itself to the leading edge of telecommunications but finds itself lagging in office automation.

Sutter sets the direction for systems corporatewide and sits on a high-level engineering policy group. He was interviewed at the Seal Beach, Calif., Information Systems Center.

What is your responsibility as vice-president of information systems? What projects and functions do you oversee?

I have three major responsibilities. The first is to set the direction for this corporation in terms of information technology, that is, as it applies to business data processing, telecommunications, office automation and factory automation. That really comes down to having an explicit architectural road map and a set of policies. We work hard on trying to define roles and policy and standards.

The second is to manage a very large data processing environment. At the end of 1985, we will have the equivalent of 55 IBM 3033s in our data centers here, and we have 33,000 users throughout Rockwell. To operate cost effectively and provide responsiveness to our users is a major responsibility.

We have five data centers. The one here is the largest; the others are in Dallas, Cedar Rapids [Iowa], Pittsburgh and outside the airport at Heathrow in London.

Each of these has a separate manager?

There's a director over each one. I have a vice-president of operations who reports to me, he's next door, and they report to him. We directly control all of the mainframes, and those 33,000 users are registered users of those data centers.

"Aerospace systems are among the most complex machines built. . . We spend almost 4% of revenues on computers."

Do these data centers correspond to the four business lines?

Originally they lined up that way. But in recent years — in fact, in recent months — we've done a lot to eliminate, more or less, that direct association. We have common billing rates, we have common naming conventions.

The data center in Dallas originally looked after the needs of the Collins division and the electronics part of Rockwell. Now we do all our corporate work there from Pittsburgh. I pay 60,000 people out of Dallas. All the defense electronics from Anaheim is handled in Dallas. We try to look at it as a virtual computer environment.

What is the network that ties the centers?

That is the third responsibility — telecommunications and networking. We are very proud of

ROCKWELL INTERNATIONAL
Corporate headquarters - Pittsburgh
Annual revenue (1984) - $8.4 billion
Employees - 107,000
MIS employees - 2,800
Main businesses - Aerospace, electronics, automotive, general industries

what has been achieved. We have one of the first and truly integrated voice/data networks, which connects all of these data centers as well as all of our phone users.

We digitize all of the voice. All of the voice calls in this building or in El Segundo first come to a switch on the first floor of this building. It's Rockwell equipment, a Rockwell-manufactured digital tandem switch. We first go through a little multiplexer, a digitizing multiplexer, then we go through our switch and go out on broadband T1 circuits from here to wherever either the data or voice call has to go. Where these data centers are we have these digital tandem switches. We go from here to Dallas over these T1s or from here to Pittsburgh either directly or through Dallas, depending on the load.

So the network is basically a combination of a very highly structured SNA, pure SNA, network for data processing, but we take advantage of the T1s by combining the SNA traffic, all of the terminal traffic and all of the printing traffic with all of our voice traffic.

We make a million calls a month on the voice side and combine all of that traffic with these 30,000 users. There are actually 60,000 voice subscribers domestically. We don't do any voice processing here for the European operations. There are about 107,000 employees, before Allen-Bradley, of which 63,000 are office-type workers and of whom almost 63,000 have telephones in the U.S. And they are all on a private communications system we call Connect, which allows us to do desk-to-desk dialing across the country.

In addition, I handle corporate applications. I have a group on the floor below, about 100 people, who are involved in all the classic corporate kinds of applications — financial, the closing of the books, paying a lot of people, fixed-asset control — a number of fundamental, corporate-level things. We run a few applications that are used jointly by the different big operations of the company. But we do not go in and try to write manufacturing applications for individual plants. We don't go in and write accounts payable applications for individual divisions. The lion's share of the applications people in Rockwell International are decentralized to those divisions to do that. Every so often there's an application that is obvious that is used by a number of divisions.

As an example, many of our divisions bid on government contracts. And there is a fairly precise way we want to ensure that costs are accumulated and contracts are priced. There is a pricing system developed years ago by North American people, and I look after it and enhance it.

On your network, what is the relative load between voice and data?

It's about 75% voice, 25% data.

Do you see that ratio changing?

It has changed already. I would say that for all of the talk and the anxiety over data networking, it has been more or less 85% voice in terms of cost. That has very slowly begun to change to the point where we are about 75% to 80% voice today. And it will continue to change, although as far as to the end of the decade, voice will still be the majority in terms of the cost and utilization.

You find that the network handles both equally well for your purposes?

You know, this is a balance that you go through.

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IBM SNA/ROCKWELL'S JIM SUTTER

We did this integration of voice and data on the network to save money. It didn't improve the quality of anything at all; it really didn't. We saved a lot of money.

How much?

We eliminated 274 intermachine trunks. We had individual leased lines. We saved in 1984, once we got to a fully steady state, upwards of $200,000 a month in terms of communications costs, or a little over $2 million a year. So we did it primarily for cost saving.

When did you make the change?

As soon as AT&T announced the T1 tariffs in the spring of '83, we decided that we would convert from these individual intermachine trunks to the T1s. We've been told that we were the first to really commit ourselves entirely to that.

By early '84, we were totally converted. By the end of '84, we were looking at savings in the neighborhood of $200,000 a month. In the process, we made a conscious trade to reduce our costs, and there are some things we give up.

What did you give up?

To this day you can design a voice system that is totally optimized for voice users — and, if you're not as concerned about costs, provide a far higher level of service on voice: no blocking, no busies, that type of thing. So, by definition, we think we've made a trade consciously to try to balance the costs with quality here.

Rockwell's S-1B rolled out in September 1984.

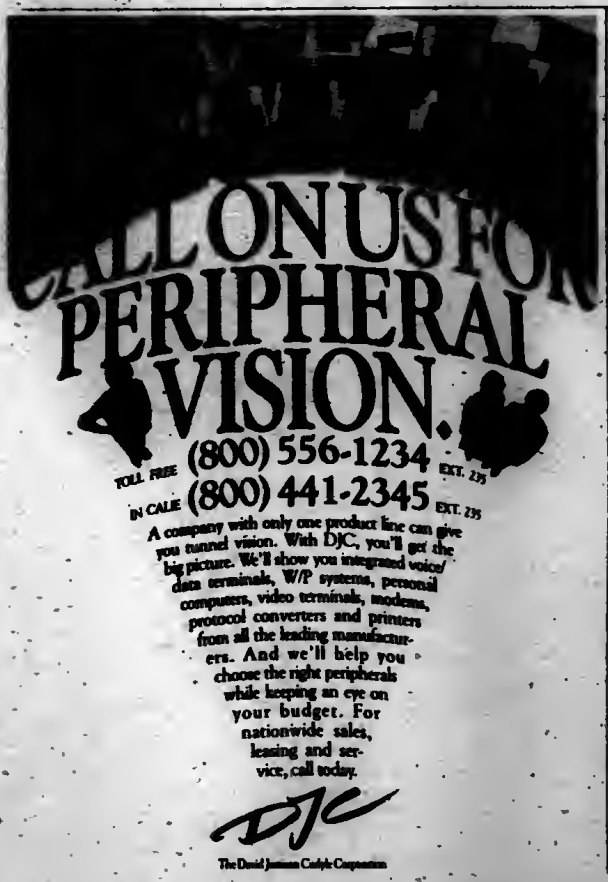
Do your end users understand this trade-off?

Top management does, and I guess I would have to say that some of our end-instrument telephone users have put up with some discomfort, although it's getting better. There are lots of ways to attack that problem. Having gotten the basic network in place and gotten a lot of the cost down, we're working hard now to improve the response time on our terminals as well as give users more functionality in a voice sense. In our corporate headquarters, both in Pittsburgh and El Segundo, we're just this summer going to put in brand new PBXs, all digital PBXs. Right now we use a telephone operating company-supplied Centrex service.

By putting in a digital, modern PBX, we will give back a lot of that functionality.

Do you consider yourself on the leading edge in telecommunications?

There isn't any question in my mind that IBM and AT&T both cite this installation as one of the most comprehensive networks in the country. That was the case even before we did the integration. North American Rockwell, going back to 1975, was one of the companies that really committed to SNA before a lot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of other people were willing to. And over the years, it stuck pretty religiously to naming conventions and standards and things that make that kind of implementation work.

That's almost from the time of SNA's existence.

Yes, exactly. Whereas I could take you to some very large corporations, and they will tell you they have lots of networks. They were kind of reluctant to commit to something like SNA, and SNA had all kinds of restrictions to it in the early days. It was not supported by a lot of equipment. And so people grew into SNA gradually. But in the meantime, the business had to be conducted, so they kept creating networks to deal with specific problems at the time. And then about 1980 or so, they looked around and they found that they had about 30 or 40 discrete networks with discrete protocols. You can go to some of the most, on the surface, advanced companies and find out they have a lot of different networks.

And you don't.

We have one data network in Rockwell. It's probably as pure as it can get.

You're an IBM shop.

Very much so.

So you were very interested in the mainframe announcement, the 3090 series.

We're working with IBM very closely on the 3090.

Are you on the delivery list?

Oh yes.

Do you have an expected date of delivery?

Yes. I really don't want to go into much detail there because we're actually an early support site for the Sierra.

You were a beta test site?

We are, and we have signed . . . I want to be careful here, because we have actually signed a legal document with IBM so that information doesn't become public.

Is the Model 200 powerful enough for you?

It's all we can get now. No, we're anxious, obviously. We have some very, very tough problems that we can only solve with very large processors. I should mention that we are taking delivery of a Cray [Research, Inc.] X-MP, which will give us some relief. We need large-scale processing. Some of the problems that are presented to us in this industry are only really handled well on large-scale computers. I'm talking now about aerospace kinds of work.

Will that be your first supercomputer?

Yes. That's an area where we're late, frankly. The Cray on the fourth floor here is nested behind, on the one hand, a cluster of 3081s, and on the other hand, we have a dual [Control Data Corp.] Cyber system. I'm going to hire two operating systems people and that's it. People in the Rockwell company all over the world, anyone who is a previous user — all the aircraft engineers, all the electronics engineers who are current users either of TSO on the IBM side or the Cyber — if they have a job they want to ship over to the Cray, it's a matter of identifying that resource and that procedure. But no [new] wiring, terminals, network. It slips right into the [existing] network.

What will you use the Cray for?

There's a whole range of applications. The most prominent probably is finite element analysis in support of airplane design.

Did you look at the Japanese suppliers or Control Data?

We've looked at CDC constantly over the years, and we are a good CDC customer here. We have not looked at a Japanese machine. As a matter of fact, in the past, there really has not been a machine available. They are just now announcing deliveries. Up to now, that's been more speculation than it has been a real delivered product here in the U.S.

On the other hand, it's unlikely we would. We haven't really been, at Rockwell, a user of Japanese computing.

Is it a "buy American" philosophy?

Well, I think it's partly a concern that I have personally. For example, on our supercomputer, a good part of that work load is classified work for the government. We have a restriction here, even about any field engineer or any systems engineer from any vendor who comes into this building: he has to be a U.S. citizen, first of all. We have that requirement in all of our locations. I'm providing a room here for a number of permanently based Cray support people. It's probably unlikely that I would enter into an agreement with a foreign supplier on something where we know that a large percentage of the applications are going to be devoted to classified work. That could change, but that's my position.

If you are on the leading edge in terms of telecommunications, where are you in terms of office automation at Rockwell?

Well, I guess I'd characterize it . . . We're very far along in the introduction of industrial-strength word processing. We have fully implemented clustered word processing throughout the company, so from the standpoint of having the facility to create and distribute documents, we've made quite a sizable investment and we've pretty much covered the office. In addition to word processing, at the end of '85, there will be in the

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neighborhood of 5,000 or so desktop workstations that are used by professional people, by analysts. They are, for the most part, IBM and Apple personal computers, and they're used to help analytic people with spreadsheets and things of that nature.

What kind of personal computer or local-area network do you have?

Well, that's where we've really dragged our feet somewhat. We have a number of local-area networks installed, but we have not made any commitment as a corporation to some overall local-area network scheme at this point.

Is that something you are pushing for?

I don't know. I came to Rockwell after almost 15 years at Xerox. At Xerox, of course, we were very dedicated to Ethernet and we had installed, by the time I left, 80 Ethernets, and there was never any question in the minds of our users as well as the systems planners what we were going to do about office automation at Xerox.

Here at Rockwell, we have a group of people in my telecommunications area that head a companywide group where we are attempting to standardize or at least reduce the variability in local-area networking options, both in the office as well as in the factory. But we've really not arrived at a position yet where we can see a product out there that really addresses the problem set that we see. These local-area networks that are offered to tie various personal computers together are quite limited in our minds in terms of their ability to handle the whole range of applications.

So while we have some of those installed, and we're doing some testing, we don't really expect that in the long run that technology is going to represent the main thrust for integrating office workstations. We think, frankly, when the dust settles, the protocols that will be used to interconnect our word processors and our office desktop computers and so on, that protocol will be an IBM-based, IBM-compatible protocol, and the document transfer and interchange arrangements will conform to this DCA/DIA [Document Content Architecture/Document Interchange Architecture] world.

All the vendors keep telling us that they agree with us and that they are promising — that is to say the DECs, the Wangs, Data General, even Xerox — that they are going to support those IBM protocols. On the other hand, they don't today. They say so, but they really don't. Even IBM has offered us very limited kinds of things to interconnect our office equipment. So I guess our posture is that we feel that people who are plunging into brick and mortar, when it comes to local-area networks, may be premature.

You would have obviously preferred something more from IBM than its cabling strategy.

Oh, I'll say.

Will that surprise you, because there was some expectation of a local-area network to be announced?

[illegible]

> **"All the vendors keep telling us that they agree with us and that they are promising — that is to say the DECs, the Wangs, Data General, even Xerox — that they are going to support those IBM protocols. On the other hand, they don't today."**

Particularly in this area of the office, we have been disappointed. We are very much of an IBM mainframe shop from the standpoint of the data center, peripherals. But when it comes to the office, both in terms of the networking approach and in terms of the appliances themselves, the devices IBM has offered us up until now have been very limited and very complicated and very expensive. And so they have not been popular in Rockwell.

Up until the IBM Personal Computer AT?

Up until now . . . First of all, in October, IBM really gave most users a clearer picture of how it hopes to correct some of those problems, both from the standpoint of marrying the Personal Computer with some of the other products and using the System/36, for example, as a lower cost, departmental clustering device, something that up until now we used minicomputers for. So there are some indications that we are going to see IBM really flesh out the line better than it has in the past.

So you're opting for an IBM System/36 rather than a mini from DEC or Prime or ISC?

We've not bought any of those yet. We're getting a lot of indication from IBM that's what it will offer. And we're very interested. In the office, for the most part, at Rockwell, the major commitment made to this day has been to Wang. We have a very comprehensive, very extensive implementation around the

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Why key DP/MIS managers are keeping RCA Cylix a secret.

world. We have Wang equipment in virtually every Rockwell office, and our headquarters also just finished upgrading the little Wang host minicomputer that controls all of that. Wang has committed to me that it is going to support these IBM protocols.

So your investment in Wang is not in jeopardy?

And Wang's future with us is dependent on its doing that. I think Wang knows that. I think it would be safe to say that we wouldn't characterize ourselves as being on the leading edge in any way in the office. That's not to say we haven't done anything, not at all, because you can't go anywhere in Rockwell without seeing a fairly advanced implementation of word processing, and we can transfer documents all over the world. And we do have electronic message systems and a wide use of personal computers.

Let's move on to the factory floor and Project Map from General Motors Corp. Can you address this area?

I will, I'd like to. Let me go back for a second and say that I spend a lot of time with both the top management people and the systems people in Rockwell. I constantly focus on the fact that if this were an airline, we would have to be awfully good at reservations systems or else all the other things we might tackle would kind of pale into insignificance.

Here at Rockwell, we have to be very good in our MIS world in supporting our engineers, in giving them the finest tools and the highest degree of connectivity we can. We also have to be very good at delivering manufacturing systems because we are a big, big manufacturing company. We're more than just an assembler. There's a lot of manufacturing companies in this country devoted to defining configurations and ordering a lot of material from suppliers and then just simply doing final assembly. But Rockwell is much more of an intense, integrated manufacturing company from the design all the way through. That's the first point I want to emphasize.

I'm not saying we don't have important applications in finance, in marketing; but when you look across the portfolio, when you prioritize things, you really have to recognize that this is an engineering company and that we compete out in that marketplace on the strength of our engineering and manufacturing know-how much more so than we do with clever advertising.

The space shuttle Columbia

Even the set of customers we deal with is more limited. We deal with Nasa, the Defense Department and General Motors.

That brings up an interesting question, because Rockwell posted record profits in the first fiscal quarter. How does information systems contribute to the bottom line?

I don't want to overstate the case. I would like to think that in every aspect of the company's business, the systems are making a major contribution.

I do believe strongly that in the short time I've been here, I've seen computers and the systems people work very effectively helping with the whole problem of bidding on contracts and supporting proposal work. We do iterations on configurations and proposals, and then there's the pricing thing that I talked about.

We just won the largest Defense electronics contract ever awarded, in Cedar Rapids. I distinctly remember around the holidays having several of our people here from Seal Beach going to Cedar Rapids and helping at the 11th hour, so to speak, with reruns and iterations. So proposal generation, preparation is something where we make a major contribution.

> **77**
>
> ***We're not at all satisfied with our degree of progress in implementing networking inside the factory.***

That's an intangible that is hard to show general management.

Very definitely. Another example, however, where you can see the impact of information technology at Rockwell — we have over the years put in a huge investment, and it's going to be in the neighborhood of $170 million to $180 million, in CAD/CAM [computer-aided design and manufacturing], interactive graphics support to engineering designs. Again, that follows the whole philosophy of making the investments where they have the most leverage. Together with the Cray, together with our Cybers and our Univac system and all of these departmental interactive graphics systems, it's a huge investment Rockwell has made in information technology tools to engineering and manufacturing.

Do you look to companies such as Apollo and Sun Micro?

We have, lately, but up until now, the lion's share of even those CAD systems have been supplied by the conventional Computervision, IBM, Cadam kinds of systems. But there's a growing number of individual workstations — Apollo, Daisy.

Is there a real need to integrate these CAD/CAM systems with the factory floor, or is that not so crucial for you?

There is a need. We are very fortunate because part of our business now is Allen-Bradley, and Allen-Bradley brings a lot of expertise in helping move information from manufacturing engineering departments right out onto the factory floor. We're just starting to exploit that.

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You mentioned working with MAP earlier. Are you saying you're not looking at all applicants with any degree of pressure to automate?

Absolutely [illegible]. But there is tremendous pressure for us, and it's good to know that as we move forward now, we have a direction there by virtue of having Allen-Bradley as part of our business. It's pretty clear that we'll be heavy supporters of the MAP protocol on the one hand and the use of Allen-Bradley products. They have, as far as we can tell, some of the cheapest—and best that you can buy.

They have about 60% of that market.

Yes, something like that. It looks to us that in the factory we're going to have two of a dozen within Rockwell about which way to go. We're going to go through a chaotic discipline of looking at needs and scrubbing them and making sure that these kinds of things are justified. At least I think we know what direction we'll head in.

Do you use programmable controllers now?

I know that Rockwell, even before this merger or acquisition of Allen-Bradley, was a big customer of Allen-Bradley's anyway. I was just at our plant in Carpentersville, Ill., and you walk through that plant, and it's full of Allen-Bradley controllers already.

One other thing you might find interesting, along the same lines, is that in supporting that part of the business that is so central, we find ourselves now interconnected with other companies. We are interconnected now with about eight different companies.

Suppliers?

Mostly customers — General Motors, Ford, Mack Truck. We're the leading supplier of heavy-duty axles, and as we are, out of our data center in Bridgeville, Pa., connected to our automotive customers for the purpose of providing order entry, shipping, that kind of information electronically.

As it happens, we had a conference at [illegible] about three years ago for [illegible] and many [illegible] were there. [illegible] and they were talking about [illegible] and I thought, well, that's us-like to this little setting. They are sophisticated [illegible] here, and they are sophisticated data [illegible] that stands to benefit [illegible] to look at how the [illegible] perform on our certain situations. There's a growing amount of interface communications beginning to occur.

What is the network?

Well, I'm afraid it differs. The Lockheed people are on our network, IRMA. And they go through a special preprocessor here from a security point of view. That's really not how they want their data to be dealt with our vendors. The [illegible] customers on the SNA, for example — there's an [illegible] the Air Force has in testing to do the same thing. We've worked on, and that will follow the network we have in place already.

When it comes to our customers, we pretty much have to do what they have asked us to do. We've taken the position that if General Motors says it wants to communicate with us on, let's say, an older 3780 kind of remote job entry-type protocol, well, that's what we'll do, whatever our customers ask.

Security has to be a major concern. Have you had any significant breaches?

Not in recent times. We have probably put more effort into security in these data centers than most companies have.

What specific measures have you taken?

I have a facility officer and a seven- or eight-person department right down the hall here, and the job they have is to define basically the [illegible] for security, what the guidelines of that security will be throughout the company and to organize a notebook of what we call here's — information systems security officers — in every division throughout the company. Their job is to ensure that everybody who comes into Rockwell, first of all, who becomes a user of computers, has been registered and is issued a user ID, password.

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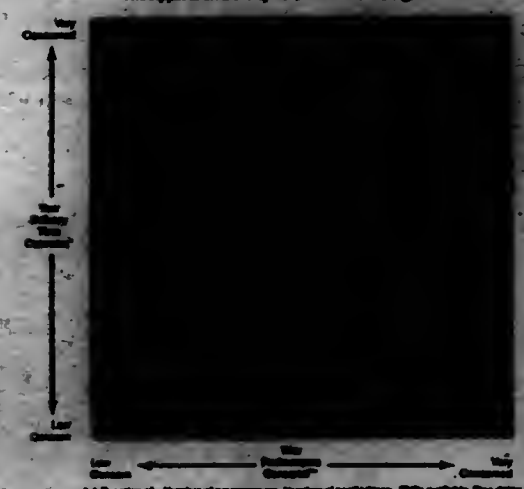
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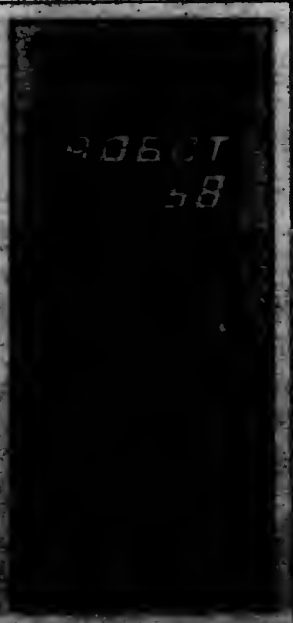

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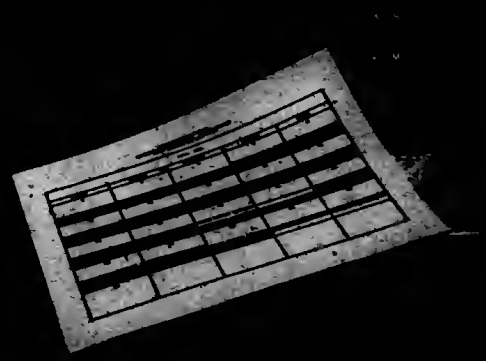

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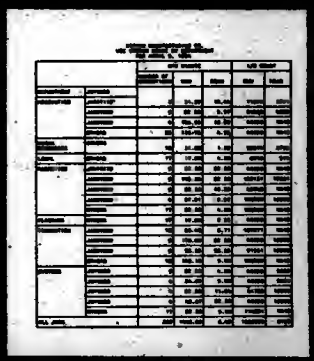

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systems all throughout the company that ensures that we monitor any attempts to penetrate the system. We count them, we log them. We remind people every 60 days to change their passwords, and we throw them off if they fail to do that.

Throw them off the system?

We suspend them if they don't do that. We've also through the system to observe people who are either inadvertently or mistakenly putting a password in incorrectly — or even worse, we mistakenly record any reoccurring attempts to come on to the network.

You've mentioning that in real time or after the fact?

Both. Actually, we can monitor it in real time, and every morning there are reports that come up. We can tailor those reports, raise or lower the threshold on how many attempts have been made before we want to see it.

We also monitor the use of the computer. People could be authorized as registered users, and if we detect through monitoring that it is being misused, we're able to get back to their management on those things, too. Overall we have a product, ACF2 [IBM's Access Control Facility 2], installed in every site and a very explicit baseline in terms of what features are implemented. We have a team of MIS auditors who spend more than half of their audit devoted to security, physical security and access control kind of security. I was just last week going through a review, and in the last year or so, there have been no reported incidents of any consequence. That is not to say there aren't any, but we don't know of any.

I wanted to talk a little bit about your background. How many years have you been at Rockwell?

I've been at Rockwell a little less than two years, and I came here in this capacity.

To whom do you report?

I report to the chief financial officer.

That's a traditional placement of systems.

Very much so. And that's true throughout the corporation. I mentioned earlier that we have applications people in the divisions, so that if you went to the division that produces the B-1B, you'll find an MIS head reporting to the chief financial executive in that division.

The people who report here directly are the people in all these data centers and the telecommunications people and all the people who do the corporate applications work — those people report to me. The people who do applications work in the divisions, whether it be automotive or aerospace, they report in to those divisions' hierarchies, and they have a dotted line here.

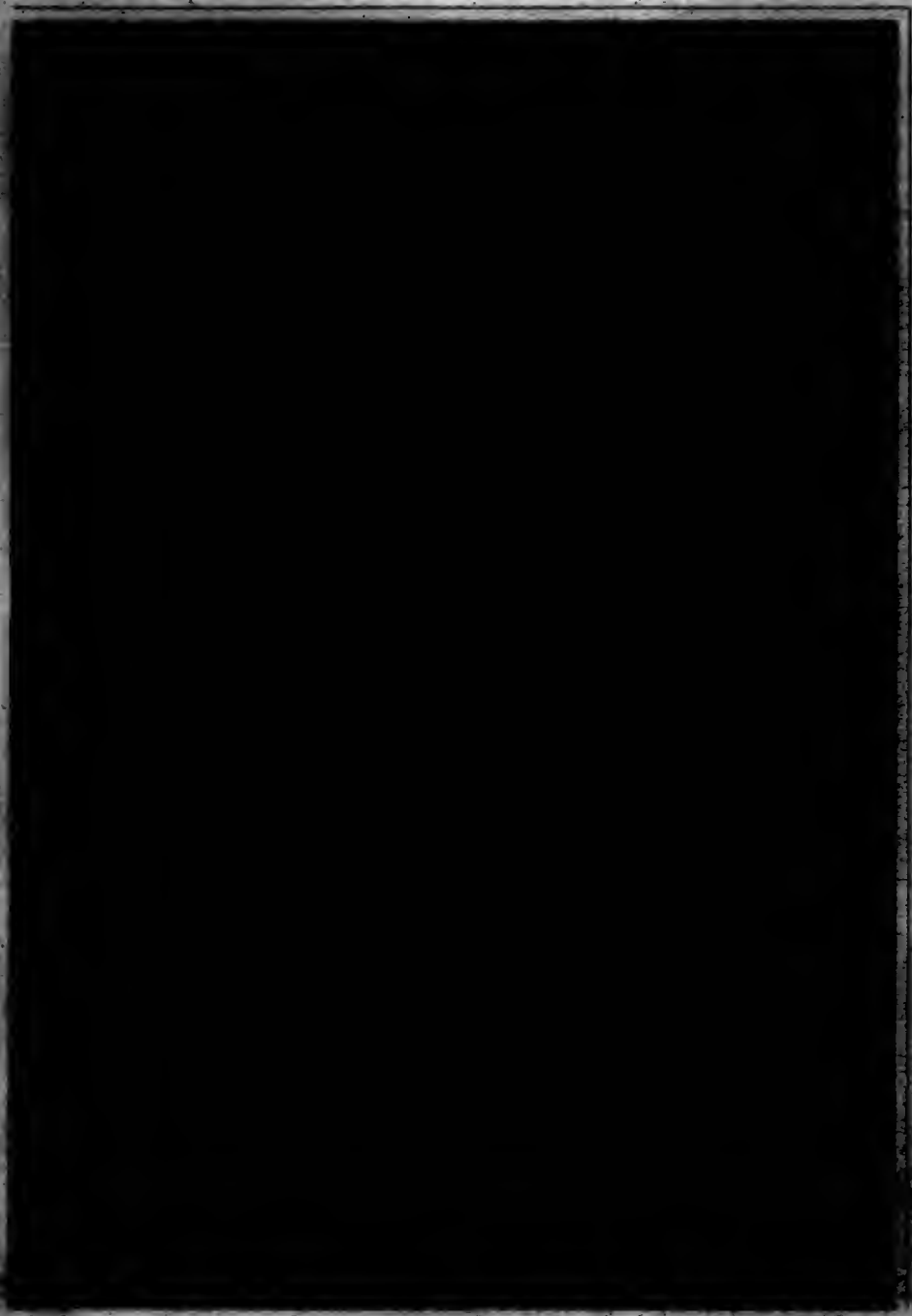
How many report to you directly?

About 1,100. That would represent about a third of the total head count in information systems and communications in the company. There are about 2,500 people in this function, of whom 1,700 are outside the Information Systems Center, and they have a dotted line here.

I want to talk about the type of people you hire in systems.

We do a lot of hiring. I have 60 openings right now. We hire all kinds. We hire applications people right out of school. We're always looking for good telecommunications people — very hard to find. We're always looking for skilled operating systems people. And we look for MIS [Information Management Systems] people. The latest skill we invented here, this is the heart of MIS, MIS was a joint project of IBM and North American Aviation people.

For your entry-level



people, are you willing to take a smart liberal arts person? Do you need to do that — are there not enough qualified computer science graduates?

Yes, yes and yes. There are lots of qualified computer science people, and I think we've had success in hiring them and, particularly, growing them through operating systems, more in the technical side. A computer science graduate who is successful tends to have an interest in pursuing the technical side. So we find them tending to be more immersed in operating systems and data base management systems and language constructs. Liberal arts students and business students, more from the verbal communications world, tend to have interests that relate to dealing with users and they are apt to end up in applications.

So they end up more in general management?

Yes, I would say that's true.

Do you have a separate technical ladder?

We have a dual ladder for our technical people. They do very well at Rockwell. It's a tradition here; it's not just in information systems.

How high can one go on the technical side?

In our terms, it would be just a little bit above our management level.

What title would the position have?

Consultant. Like a lot of companies, just a little bit past our first level of manager, a technical person can rise without taking on the burdens of administration or having people report to him.

What about AT&T's move into the computer industry? Is it a viable vendor? Are you looking at the minis or the personal computer?

We are really a big customer of AT&T Communications. That Accunet T1 world is fundamental to us. On the information systems side of AT&T, we have a good number of AT&T PBXs installed, and I think we'll continue to see that grow.

So far, I personally have not been able to identify a real need for, or an application for, the 6300 Personal Computer. We have done very little on that side of it. We've also done very little on the 3B side so far.

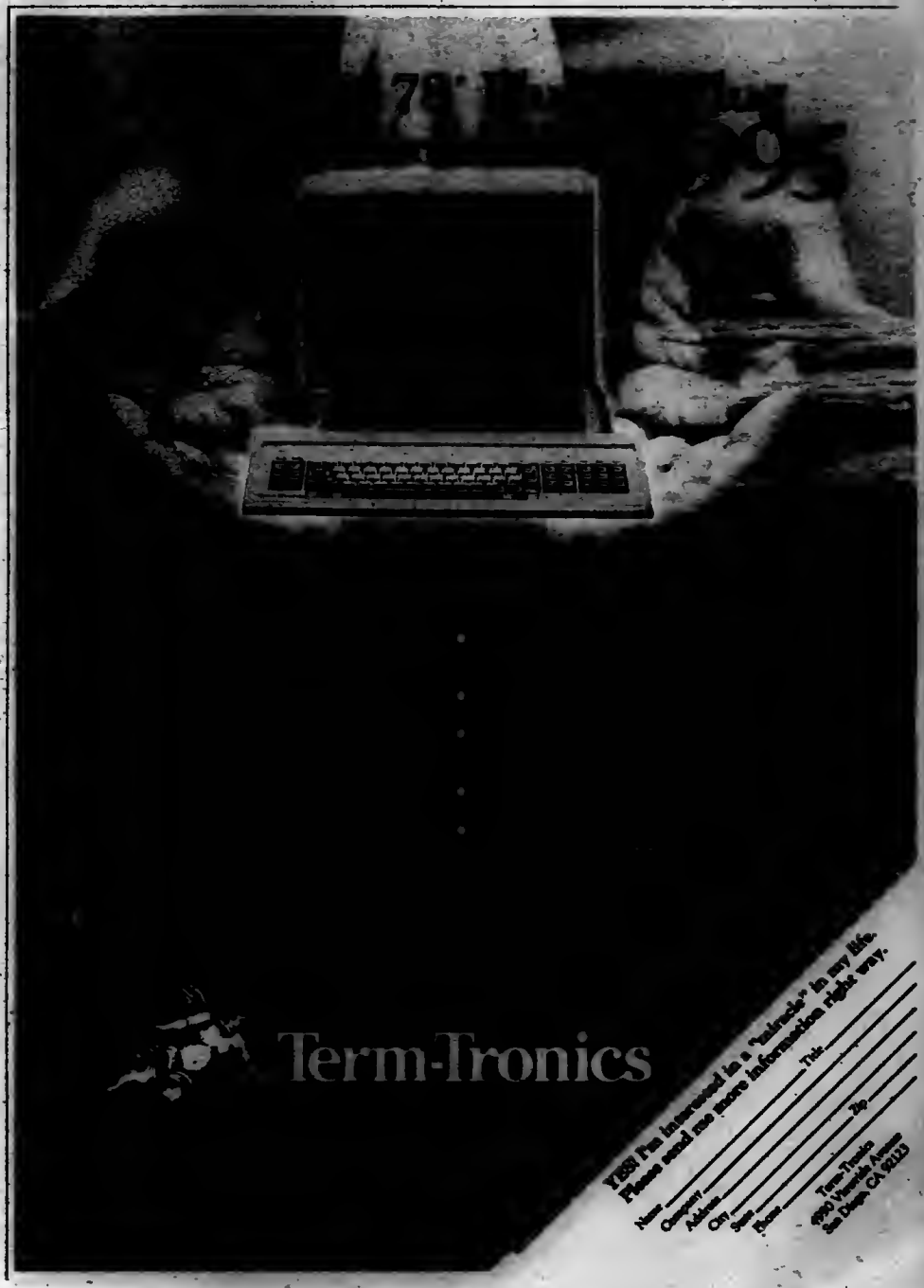
Do I think it's viable? I think that AT&T's efforts to date on the information systems side, outside of its traditional PBX world, haven't really shown much promise. In the future, as our engineers and others find software packages, as Unix grows as sort of a prerequisite, I guess I would predict some increased level of business will be done with AT&T.

So AT&T's hope that its strong communications customers will become computer customers hasn't really materialized?

I would say not in Rockwell to date. They have maintained their position with us through a lot of hard work, because we were not entirely happy at the outset, and they put a lot of effort into maintaining their relationship with us as a communications supplier. But as an on-premise equipment supplier, from my perspective, the major product set we will continue to work with will be in the PBX area.

Will information systems for the foreseeable future continue to report through the chief financial officer? Is there any thought of creating a chief information officer?

> ***"There's talk [about a chief information officer], and we consider it from time to time, but I don't see anything formal in the way of a fundamental change."***



I haven't seen anything formal. One of the things I spend time doing is making an effort to get our information systems community more visible and to relate better with our top engineering people. In doing that, I try to take a little bit of the lead and associate as much as I can with our engineering side of the house.

Recently I was gratified that our chief engineering executive, who is the senior vice-president of research and engineering and runs a top-level engineering policy group, invited me to be a member of that group. So I find myself at meetings where I'm the only person there who isn't really leading one of the big engineering groups. But the reason I'm there is that they are increasingly dealing in software-based kinds of technologies, and their whole engineering community is sitting at terminals all of the time. I represent the entity that delivers all of the computational support.

> **99**
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> *We're having a heck of a time as we come up the ramp trying to give a wide number of people access to the Cray and at the same time preserve the classified work for people who have to have a highly secure environment.*

There's talk [about a chief information officer], and we consider it from time to time, but I don't see anything formal in the way of a fundamental change.

There are some important advantages in having the custodian of all this data within the purview of the chief financial officer.

It really takes the systems people themselves being aggressive and proactive. I don't think it's necessarily the case that it has to be reorganized. Because no matter where they end up, they're really there to support every function. It wouldn't seem to me we were going to fix much by putting all the systems people in engineering.

How does information systems contribute to the development of something like the B-1 Bomber?

There are more than 100,000 parts in that ship. The configuration control problems of pulling together something as complex as the B-1 — and there are five other associate contractors, and they all work on part of it, they all have it subsystems, and all the configurations have to tie together.

Computers are used, first of all, to design it. We build effectively what's called an electronic wind tunnel. We can test the performance of that machine through simulation using computers. Then to build it, to order all the materials, to do all the scheduling . . . All the project management is done through computers. I'd say that thing is as computer-intense as any product.

It could not be built without computers?

It could not be built; neither could the shuttle. For the space shuttle and all the space programs, all the iterations of the design are based on intensive computer modeling, simulation. These aerospace systems are among the most complex machines built. The number of parts, the number of suppliers and the materials are, almost in every case, things that have never been built that way before. They use computers to simulate their behavior and their components under different conditions.

I can get worked up about this subject. We have a heck of a lot bigger computer programs for the size of our business here. We spend almost 4% of the company's revenue on computers.

How many supercomputers could you use — not how many do you want?

In realistic terms, we probably should have two. We should be able to devote one supercomputer almost entirely to classified work and isolate it. Right now, we're having a heck of a time as we come up the ramp trying to give a wide number of people access to the Cray and at the same time preserve the classified work for the people who have to have a highly secure environment.

You have the Atlantis rolling out.

That will be the final shuttle.

So there's the shuttle and the B-1 Bomber. What else is computer-intensive?

The other one is the Navstar program, the Global Positioning System, I guess the largest satellite contract ever awarded. Now we have the ground equipment to go with it. Both of those systems never existed until Rockwell people invented them. You talk to those engineers and ask them how far they could get without a computer, how competitive would they be compared with Hughes or somebody else if Hughes was over there doing iterations on a large-scale processor and all they had was a calculator.

In this business, to be competitive, to even be in the game, you have to go out and hire a really top-notch engineer, and he won't come to work for you unless you tell him that what he's going to have at [his disposal] is a fairly plush library of [illegible] software and a fairly [illegible] data center.

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IN DEPTH

Needed: graphics standards

Can imposing design standards actually promote the freedom to experiment and innovate? In the case of the proposed Computer Graphics Interface standard and other accepted software standards, the answer is emphatically yes.

By Thomas Clarkson

The cost of hardware often is blamed for inhibiting the growth of computer graphics. But in fact, component costs dropped substantially during the past decade. The problem lies instead with the lack of software standards. Just as the acceptance of Microsoft Corp.'s MS-DOS as a de facto standard contributed to a dramatic rise in the availability of applications for personal computers, graphics standards will increase the use of graphics in all application areas.

In the early days of computer graphics, users were obliged to write their own systems and application software. Without a standard interface to graphics functions, adding on a new device meant developing new software so the components could talk to each other.

Because of the cost of software development, early de facto software standards emerged with the dominance of successful hardware products such as California Computer Products, Inc. plotters and Tektronix, Inc. graphics terminals. When these companies added software support (Tektronix Plot-10, for example), their implementation of graphics utilities became the common graphics language for applications. But as the industry grew, that wasn't enough.

Work on two levels

Current efforts in standardization are the result of more than a decade of work by European and U.S. organizations. These efforts apply to two main interface levels: the applications programmer interface and the hardware device interface.

The programmer interface is a conceptual model as well as the syntax that a programmer uses to incorporate graphics into an application program. The device interface refers to the protocol between the device-independent and the device-dependent graphics functions. The programmer-level interface standardizes the calling conventions and functions in a graphics subroutine library, while the device interface defines a device driver protocol that is consistent for all graphics devices.

The Graphical Kernel System (GKS) is considered the programmer-level interface. GKS originated in Europe but has felt the influence of many

national organizations, including the American National Standards Institute. GKS has nearly been accepted by the International Standards Organization and is now in the process of being adopted as an American National Standard.

GKS achieves source code portability. It allows graphics applications programs to be transported between different computer installations by providing a consistent interface in high-level languages such as Fortran, C or even Basic.

Programmers will be able to work on different hardware without going through a costly learning curve. IBM recently introduced the Graphic Software Systems (GSS) implementation of GKS as part of its IBM Personal Computer Professional Graphics Series.

Two emerging standards address the hardware driver interface level. The first, North American Presentation Level Protocol Syntax (NAPLPS), is based on the concept of videotex. Developed in Europe and modified in Canada, this idea was adopted by AT&T as a standard for transmitting graphics over telecommunications lines. The second is the Virtual Device Interface (VDI).

NAPLPS is aimed primarily at providing a way to connect television sets and other very low-cost raster devices to telephone lines so that consumers can access public commercial data bases. Providing only one-way at a time communications, it precludes interactive graphics applications. However, its data compactness allows small amounts of information to be transmitted quickly over low-cost communications lines.

At this point, it looks as if NAPLPS will be used only in low-cost home terminals.

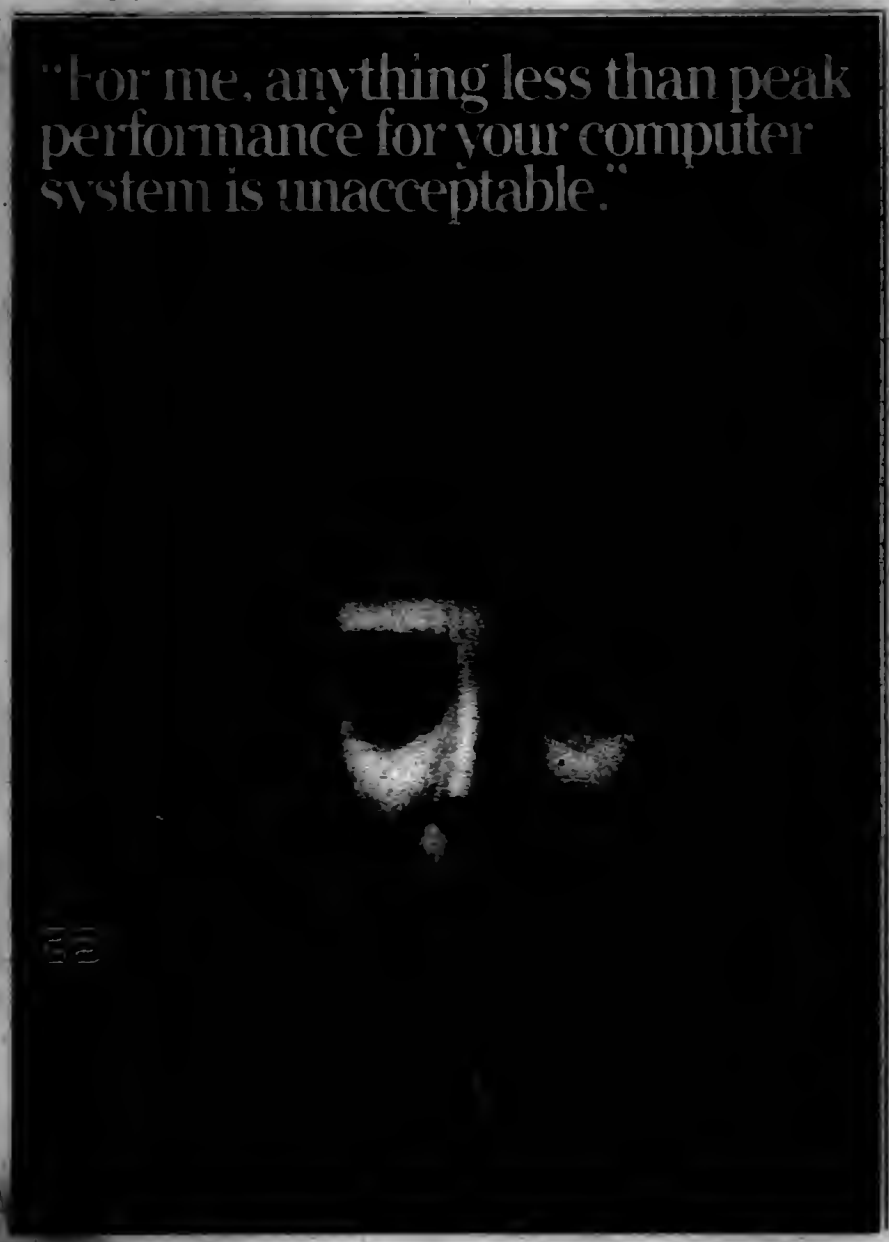
Although NAPLPS is important because of the number of devices that could potentially use this standard, it is not an optimal interface for general computer graphics applications. It is parallel to another, more general, device interface called VDI or, its newer name, Computer Graphics Interface (CGI). A related emerging standard is the Computer Graphics Metafile (CGM).

Attributes of CGI

CGI makes all devices appear as identical graphics devices by defining a standard I/O protocol that results in device-independent applications. The protocol isolates the unique characteristics of the physical graphics device in the device driver software module. CGI is being developed by the ANSI X3H3 Technical Committee as a standard interface between device-dependent software and graphics devices. The GSS implementation of the emerging CGI standard was recently introduced as the IBM Graphics Development Toolkit.

CGM is at the same level as CGI. The power of CGM lies in its ability to store the graphics information in a compact form on disk or other media. Because the applications software speaks in only one form of generic graphics commands, the design of CGM must also be able to accept this information. The application is not aware of the physical output device because the input to CGI and CGM is the same. The design of both must take into account future technological enhancements of devices.

"For me, anything less than peak performance for your computer system is unacceptable."



Industry benefits

For the graphics peripheral equipment manufacturer, the benefits of these standards are substantial. Their adoption means that a CGI driver for a particular graphics device need only be written once. All CGI-conforming graphics applications will then be able to utilize the standard device driver.

Eventually, peripheral equipment and semiconductor manufacturers will implement more of the software driver functionality directly in their hardware — in effect moving the CGI interface down into the graphics device or display controller itself.

This approach offers many benefits to the peripheral industry: less design effort expended, numerous second sources, higher reliability with a proven design, reduced costs and larger markets.

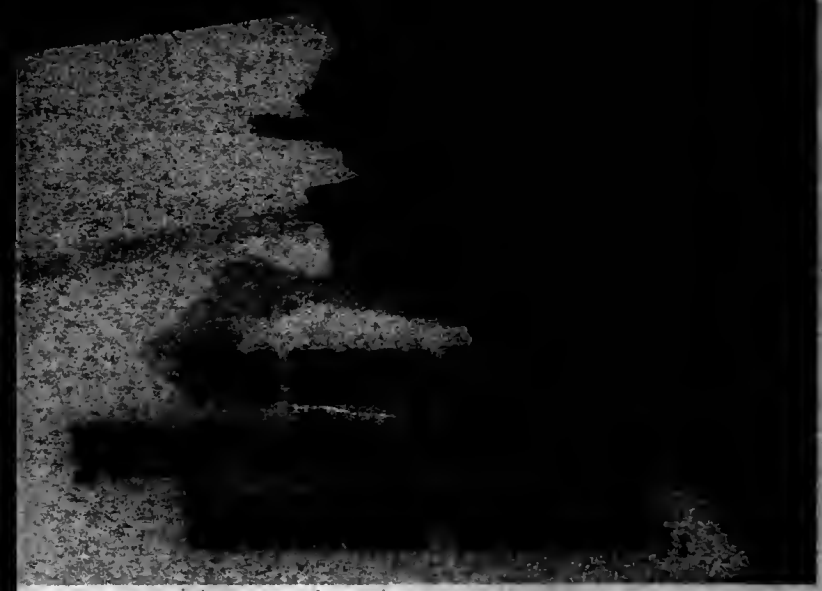
To software developers, graphics standards allow portability for applications programs. Not only will they see a consistent interface to graphics functions at the language level, but graphics runtime libraries can be generic, with device dependencies residing in the operating system.

To the computer manufacturer, this means installing the graphics portion of an operating system only once. Compilers and other utilities that reference the CGI standard will then be able to access the system peripherals without special adaptation. Higher level functions will be put into the device hardware (or firmware) and, eventually, graphics devices may incorporate a full CGI interface, eliminating the need for device drivers entirely.

For end users, more graphics solutions for their productivity problems will be created and available on a wide range of hardware. End users will no longer have to worry about exact system configuration or lack of software support for new peripherals.

Realizing standards

For a standard to be meaningful, it must be widely implemented, which requires a thorough understanding of computer graphics as well as the details of the standard specification. An intimacy with the internals of the target operating systems, the computer hardware and graphics peripheral devices is required. The graphics standards implementation should be consistent with the general architecture of the target system and as transparent to the user as possible. Unusual operational procedures



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unique to graphics applications should be avoided.

Finally, for standardization to be realized, the software must get out into the marketplace. The issues of distribution and support need to be addressed.

Freedom to experiment

Can imposing design standards actually promote the freedom to experiment and innovate? In the case of the proposed CGI standard and other accepted software standards, the answer is emphatically yes.

Take, for example, the microcomputer industry. Computer manufacturers rely on semiconductor manufacturers for advanced products that are still compatible with other equipment the computer manufacturer makes. The independent software vendors can only hope that their software will run on what the manufacturers are making. Peripheral vendors must remain compatible with their previous lines to interface with what is already available in the marketplace. End users can only hope that the computer industry will produce coordinated products that will work together.

Each major group in the industry is, in a sense, locked in to what the other is doing. A breakthrough by any one group — no matter how beneficial — could be unusable if the other three were unable to interface with it.

> ***Users are no longer dependent on a single software vendor or a small handful of vendors that are specifically promoted by the hardware manufacturer.***

Open market

The full impact of the proposed CGI standard is difficult to predict this early. But it's already clear that its importance will be far-reaching and that it will open new markets.

When the standard is in general use, customers can select software or hardware on their own merits, rather than by the hardware on which the software operates. They'll be able to use the latest hardware or the most up-to-date software that includes graphics, for example, instead of being restricted to only the software that runs on their installed equipment.

The flip side of this change is more intense competition, with the industry itself being revitalized. Manufacturers will be able to design and make products based on the latest technology, without regard to their own or other manufacturers' compatible products. Through the CGI, compatibility will be ensured.

MS-DOS freed programmers from the constraints of coding directly for the hardware. The proposed CGI standard frees them from the design constraints and characteristics of a particular microcomputer graphics system or peripheral.

Until now, the applications programmer had to write and debug the graphics elements and I/O interfaces for the specific devices to be used. That work is already done in the GSS products that IBM is using in its Professional Graphics Series. The IBM Graphics Development Toolkit lets the programmer interface to the CGI, which in turn provides access to independent device drivers that interface with peripherals.

The designer can now write software to output computer graphics or alphanumeric data to a logical device, such as a printer, or for input from a logical device, such as a mouse.

This ability to create device-independent software benefits computer manufacturers and independent software vendors alike.

Users are no longer dependent on a single software vendor or a small handful of vendors that are specifically promoted by the hardware manufacturer. A wide range of application software will be available.

Because of a lack of standardization in the past, manufacturers of computer graphics peripherals could sometimes find themselves constrained by their own products. For example, Epson America, Inc., Centronics Data Computer Corp. and other printer manufacturers had to design new products that were compatible with their original lines so that users could upgrade their systems without penalty.

Fostering innovation

The value of the CGI standard goes beyond a new freedom to develop state-of-the-art products. The quality of computer graphics is enriched as well.

Because applications programs can be developed faster and used by more people on the equipment they have available, graphics will become far more powerful and pervasive.

Computer graphics were not used in the past because they were difficult to incorporate. Now they can conveniently be used.

About the author

Thomas Clarkson is president and co-founder of Graphic Software Systems, Inc. in Wilsonville, Ore. Prior to that, he played a key role in enhancing Tektronix, Inc.'s Plot-10 interactive graphics software library. He was also a software project leader and computer analyst at Jet Propulsion Laboratory.

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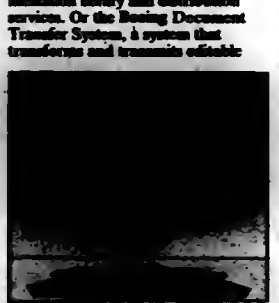

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MICROCOMPUTERS

Microrim unwraps enhanced DBMS

BELLEVUE, Wash. — Microrim, Inc. has announced R:Base 5000, a $700 data base management system for the IBM Personal Computer line, designed for both first-time users and professional programmers, according to the company.

Among its enhancements over Microrim's existing R:Base 4000 package, R:Base 5000 provides a menu-driven front end that gives "a visual way of defining data bases," said Wayne Erickson, Microrim's chairman.

The Application Express front end gives users graphics presentations of data base tables, which they may then fill with data. Developing an application, users walk through a series of prompts and menus, and R:Base generates the application code, Erickson explained. Automated screens, menu builders, data entry forms and reports and prewritten commands for most functions are provided.

Program development tools

For experienced users, the package also offers a set of program development tools including a procedural language, custom macros, a report writer with multipage and multitable form capabilities and a compiler, according to Microrim President Kent Johnson.

In addition to speeding execution times, the compiler locks the application code so that programs developed by an MIS department cannot be modified by users, Johnson emphasized.

R:Base 5000's Filegateway allows users to load data from Lotus Development Corp.'s 1-2-3, Software Publishing Corp.'s PFS:File, Ashton-Tate's Dbase II, Data Interchange Format, Sylk or Ascii files, the company said.

Data bases are limited only by operating system and hardware constraints, according to Erickson. The package handles up to 40 files per data base, with the number of records per file limited by PC-DOS file size.

The program runs on the IBM Personal Computer, Personal Computer XT, Personal Computer AT and compatible machines. It requires PC-DOS 2.0 or higher and 256K bytes of internal memory, and works with Microrim's Clout natural-language software.

See MICRORIM page 75

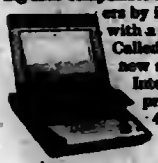
- A random-access memory disk for Apple's Macintosh was offered by Western Automation Laboratories./86
- Leading Edge adds a spelling checker to its word processing program for the IBM Personal Computer line./86

Software/87
Communications/78

Kaypro laptop joins crowd

By Kathleen Sullivan
CW West Coast Bureau

SOLANA BEACH, Calif. — Kaypro Corp., which bills itself as the "Volkswagen of computer manufacturers," last week joined the bevy of companies offering IBM-compatible briefcase-size computers by introducing a portable with a $1,995 price tag.



Called the Kaypro 2000, the new system is based on an Intel Corp. 8088 microprocessor running at 4.77 MHz, Kaypro said. The unit reportedly comes with The Kaypro 2000 256K bytes of random-access memory, which is expandable to 768K bytes.

According to the company, the Kaypro 2000 features a built-in 3½-in. disk drive with 720K bytes of memory. The system is packaged in a brushed aluminum case and weighs 11½ lb.

The Kaypro 2000 includes a 25-line LCD that reportedly features tilt adjustment, contrast control and a low-glare lens. Its

See KAYPRO page 76

Microsoft offers upgraded Pascal, Fortran versions

BELLEVUE, Wash. — Microsoft Corp. has introduced enhanced versions of its Pascal and Fortran languages for programming on the IBM Personal Computer and compatibles.

Running under the MS-DOS operating system, the enhanced releases reportedly include such multiuser network support features as file-sharing, file-locking and record-locking. They also offer code portability, enabling users to transport source code between MS-DOS and Microsoft's Xenix operating system.

Both Fortran Version 3.3 and Pascal Version 3.3 are said to interface with other Microsoft languages, including Microsoft C and Microsoft Macro Assembler, as well as with each other. Both of the enhanced languages also make calls to C routines through C calling conventions, start-up routines and memory management routines, all of which are similar to those used in C itself.

The upgraded Fortran reportedly includes a character substring function that

See UPGRADES page 75

SMALL TALK
Eric Bender
CW Senior Editor

Vendors climbing memory barrier

Like farmers who want only the land next to their own, personal computer users are always looking for a little more memory.

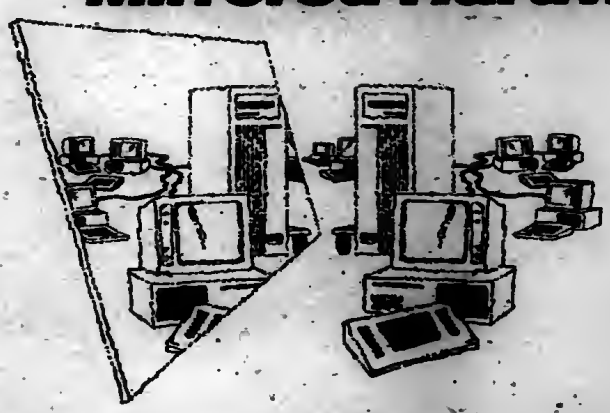
A few years ago, the 640K-byte direct-address range for Microsoft Corp.'s MS-DOS seemed to stretch beyond the horizon. But today, for users running giant spreadsheets or multiple applications, that 640K-byte limit looms like a brick wall, forever requiring a slow trudge over to the disk drives.

The limit's not really written in cement, however, and rumor has it that this week we'll hear from Intel Corp., Lotus Development Corp. and maybe even Microsoft on how to get around it.

Intel's 8088 processor can directly address 1M byte, but the space above 640K

See LIMIT page 76

Mirrored Hardware



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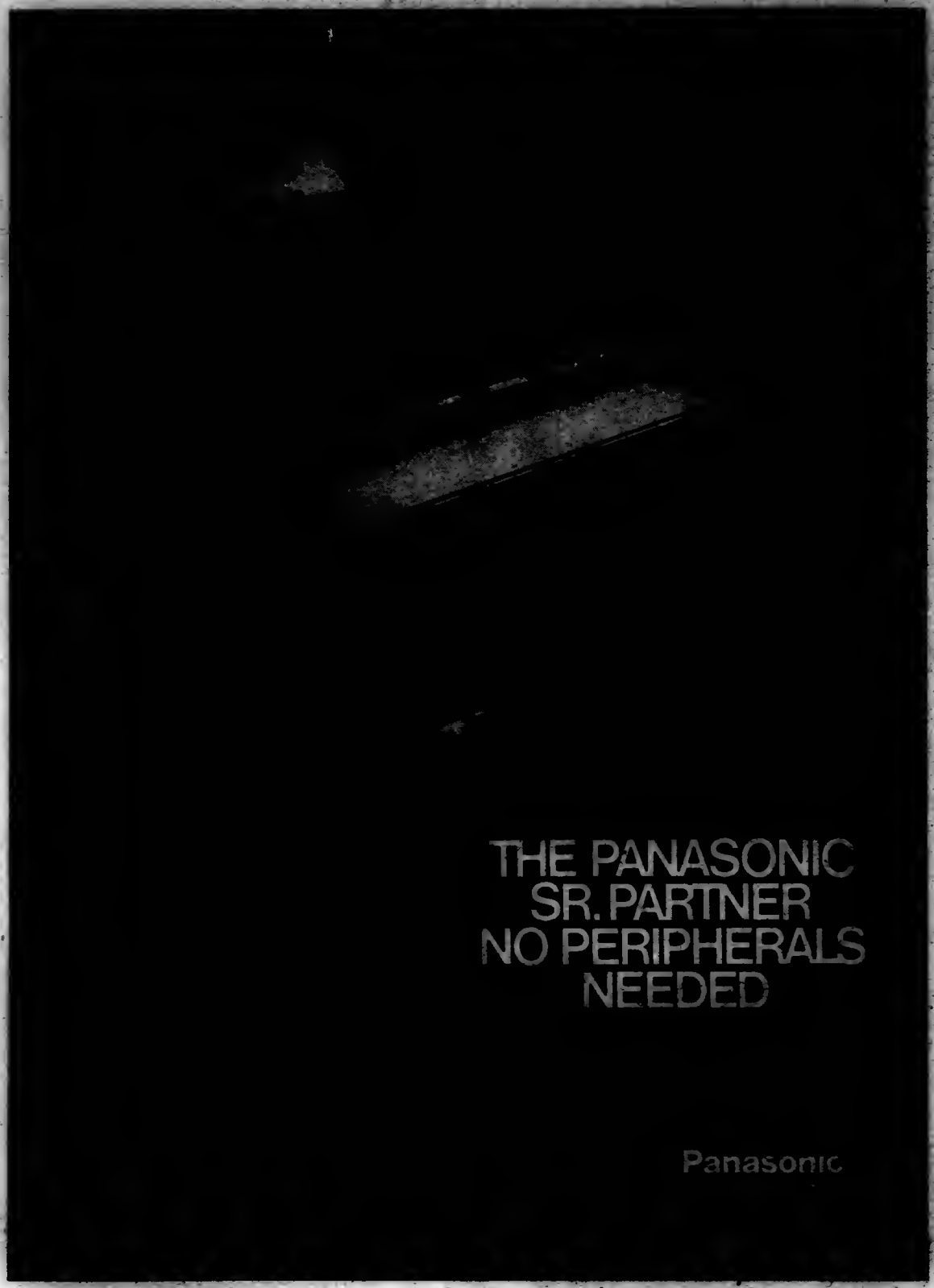
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Dasch storage system bows from Western Automation

By Kathleen Sullivan
CW West Coast Bureau

BOULDER, Colo. — Western Automation Laboratories, Inc. recently introduced the Disk Acceleration/Storage Control Hardware (Dasch) system for the Apple Computer, Inc. Macintosh microcomputer.

According to the firm, the Dasch is a random-access memory disk system that stores data electronically in a RAM array rather than mechanically on a tape or disk.

To hook up the Dasch system, users plug in a cable to the Macintosh's Imagewriter printer port, the company said. The Dasch system's bypass mode allows printer commands to pass through the Dasch to the printer, while storage and retrieval commands are intercepted, the firm said.

The system can also be attached to the Macintosh's modem port, which will allow computers on the AppleTalk network or computers connected to other printers to use the Dasch system, the company said.

The Dasch unit comes in three sizes, offering 512K bytes, 1M bytes and 2M bytes of storage. All Dasch units can be upgraded to the 2M-byte maximum, the company said. Up to eight Dasch units reportedly can be daisy-chained together.

The 512K-byte Dasch costs $495, the 1M-byte version will be priced at $975, and the 2M-byte version costs $1,795.

For more information, Western Laboratories can be reached at P.O. Box 3496, Boulder, Colo. 80307.

Voice form-filling out for TI micros

WINSTON-SALEM, N.C. — Software that would permit users of Texas Instruments, Inc.'s Speech Command system for its Professional personal computer to fill out forms using spoken commands has been introduced by Micro Nova Systems, Inc.

The Micro Nova Multiform Solution series reportedly would allow users to create their own vocabulary for form completion. Each package consists of standard forms for a specific industry. Among the industries included are real estate, appraisal, mortgage banking and insurance.

According to the vendor, prices for the forms in the Multiform Solution series range from $195 to $995, depending on whether automatic math calculation is included in the package.

The package requires 512K bytes of internal memory and the TI Speech Command hardware.

Micro Nova Systems is located at Suite 102, 3410 Healy Drive, Winston-Salem, N.C. 27103.

Zenith cuts prices for Z-100 micros

GLENVIEW, Ill. — Zenith Data Systems has cut suggested retail prices for three models in its Z-100 PC line of IBM Personal Computer-compatible systems.

Cost of the hard disk drive Model ZW-161-52 has been reduced from $4,499 to $3,899. Price of the ZF-151-52 desktop version, with two floppy disk drives, dropped from $2,799 to $2,699. Cost of the Model ZFA-151-52 portable system was cut from $2,999 to $2,899.

Zenith Data Systems is located at 1000 Milwaukee Ave., Glenview, Ill. 60025.

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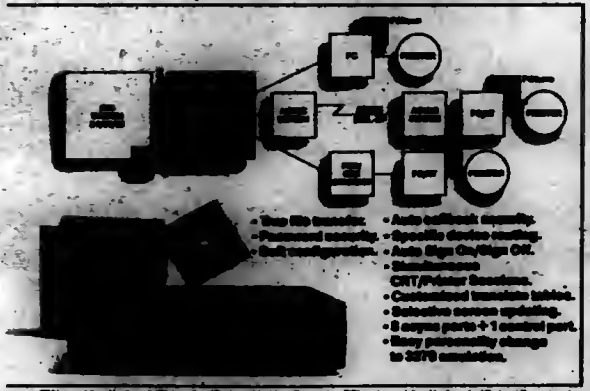
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MICROCOMPUTERS

Cadmus introduces graphics file server for Macintosh

LOWELL, Mass. — Cadmus Computer Systems, Inc. has announced the Cadmus workstation, a graphics development file server for the Apple Computer, Inc. Macintosh in the AppleNet network.

The system, priced at $26,195, is said to provide the graphics development features of the Macintosh in a high-performance workstation. Cadmus windows reportedly support multiple applications for developing icon-oriented user interfaces and graphics applications.

The Cadmus hardware features a monochrome graphics controller with vector operations hardware, a 17-in. monitor-sized bit-mapped display, bit-mapped keyboard and three-button mouse. The workstation configuration includes the graphics subsystem with a Motorola, Inc. 68010 microprocessor, 1M byte of random-access memory, a 20M-byte streaming tape drive, a 65M-byte hard disk, two asynchronous ports, the AT&T Unix operating system and C compiler.

Network, SDC candidate

The Cadmus software is said to emulate Tektronix, Inc. Tektronix 4014 graphics and Digital Equipment Corp. VT-100 terminals and to run Xerox and Graphical Kernel System graphics in Cadmus windows.

The software is reportedly compatible with Macintosh graphics standards, emulating Apple's user interface — Toolbox — to coordinate windows, pop-up menus, mouse manipulation and text fonts.

For more information, Cadmus Computer Systems is located at 600 Suffolk St., Lowell, Mass. 01854.

Leading Edge adds to WP tool

WELLESLEY, Mass. — Leading Edge Products, Inc. introduced a version of its Leading Edge Word Processing software that contains a spelling checker.

The spelling checker reportedly scans a document, detects errors and suggests possible correct spellings. Its dictionary contains 50,000 words. If a word is not in the dictionary, it is flagged as a misspelled word, the vendor said.

Users reportedly can also create their own dictionary, with an upper limit of 4,000 words on diskette-based systems and an upper limit on hard disk-based systems.

Leading Edge Word Processing software, with print merge and spelling checker, is $250. Leading Edge Word Processing without these features costs $180.

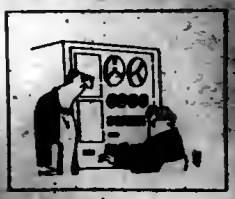
Leading Edge Products is located at 110 Cedar St., Wellesley, Mass. 02181.

Epson cuts printer costs

Epson America, Inc. has reduced prices by 10% to 20% on several of its dot matrix printers for personal computers.

The prices are as follows: LX-80, $290; FX-80+, $400; FX-100+, $600; LX-1500, $1,395; and JX-80, $650. They had been priced, respectively, at $340, $500, $840, $1,695 and $750.

Epson America can be reached at 2780 Lomita Blvd., Torrance, Calif. 90505.



SOFTWARE

■ Control Data Corp. has introduced three modules for the simplification of business software on its Plato computing system. The modules run on the Intel Personal Computer and the IBM PC/XT and Plato Personal Training System.

The Advanced Tutorial Model (ATM) reportedly offers graphics, student interaction and branching capabilities in a tutorial structure. It also includes three methods of reinforcement, including multiple-choice and short-answer.

The Graphic Illustration Model (GIM) reportedly integrates the Advanced Tutorial Model with Basic, three-dimensional drawing and manipulation. It offers monitoring of user-initiated events, multiple learning paths based on a student's responses.

The Certification Testing Model (CTM) reportedly facilitates pooling items for test and retest, question review and shuffling and flexible testing strategies.

ATM and GIM are priced at $10,000 each. CTM is priced at $15,000.

CDC: P.O. Box 0, 4201 25th Ave. S., Minneapolis, Minn. 55417.

■ Ellenmore Systems Corp. has introduced a version of its RPG/Personal decision support software for the Hewlett-Packard Co. Touchscreen Personal Computer.

The product reportedly includes corporate planning and analysis tools such as description of unprocedural modeling language, data management, goal seeking, color business graphics and programming.

RPG/Personal costs $1,500.

Ellenmore Systems, 3110 Par Blvd., Austin, Texas 78731.

■ Computer Cognition has announced that its Acuity set of 14 accounting modules is now available for the AT&T 3B series minicomputers running Unix.

A spokesman said the integrated Acuity modules are tailored to general business requirements, engineering or accounting firms, wholesale and distribution and manufacturing support.

Applications are designed for the Unix environment, including System III and V, University of California at Berkeley 4.1 and 4.2 and Microsoft Corp.'s Xenix.

Acuity modules are priced from $1,500 to $3,000 for object code.

Computer Cognition, 205 W. 35th St., National City, Calif. 92050.

■ Structured Software Systems, Inc. has announced Complex Math 3.0, a language enhancement that is said to add complex numbers to the Hewlett-Packard Co. Series 200 Basic 3.0 operating system running on HP Series 200 minis.

The product reportedly adds built-in functions to the Basic 3.0 system, including hyperbolic trigonometry and array operations such as element-by-element arithmetic, matrix multiplications, vector dot product, matrix inversion and determinant, matrix transpose and reorder, sum of a complex array and matrix row and column sum.

Complex Math 3.0 allows complex numbers and operations to become an integral part of the Basic language, according to the vendor.

The product costs $795.

Structured Software Systems, Box 1073, Irick Road, Mount Holly, N.J. 08060.

■ Level Five Research, Inc. has introduced Insight 2 software, a development and runtime environment for expert systems. It runs on the IBM Personal Computer, the Digital Equipment Corp. Rainbow and the Victor Technologies, Inc. model 9000 personal computer.

The software, available May 1, will offer the ability to use objects, with single or multiple attributes, to describe facts that in turn describe a domain of knowledge, according to Level Five.

It will also reportedly of-

Continued on page 60

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*(Turn Page Upside Down for Answers)

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MICROCOMPUTERS

Continued from page 67

for the ability to provide each conclusion of a rule with its own confidence factor.

The software costs $495.

Level Five Research, 4980 South A-1-A, Melbourne, Fla. 32951.

■ Oasis Technologies, Inc. has announced an enhanced version of its Version 7 Basic 86/87 graphics software that is said to incorporate a virtual device interface (VDI) graphics translation program. The product, VBasic 86/87, is designed for use with the Oasis 86 operating system running on the IBM Personal Computer XT.

The VDI program reportedly translates commands generated by VBasic 86/87 statements into an output device command sequence to produce the required graphics image. The same program statements are said to generate pictures for different graphics devices, regardless of the resolution.

VBasic 86/87 reportedly supports high-resolution (640- by 200-pixel) black-and-white graphics or medium-resolution (320- by 200-pixel) four-color graphics on the Personal Computer XT. High-resolution (660- by 720-pixel) black-and-white graphics are supported on the Printronix, Inc. P300 and high-resolution (640- by 560-pixel) eight-color graphics on hardware from other manufacturers, according to the vendor.

The VBasic 86/87 is priced at $695. The upgrade cost for Version 7 Basic 86/87 users is $150.

Oasis Technologies, Suite 100, 201 Lafayette Circle, Lafayette, Calif. 94549.

■ Software Toolworks has introduced Toolworks C, a C language compiler for personal computers under Microsoft Corp.'s MS-DOS operating system.

The compiler reportedly supports integer and character data types and is a translation and upgrade of the C/80 compiler, which Software Toolworks markets for systems under Digital Research, Inc.'s CP/M operating system.

Toolworks C requires no assembler and directly produces object modules compatible with the MS-DOS linker. Other special features include an execution profiler, which lists the number of calls and time spent in each subroutine, and a program trace facility.

Toolworks C costs $49.95.

Software Toolworks, Suite 1118, 15233 Ventura Blvd., Sherman Oaks, Calif. 91403.

■ Golden Software, Inc. introduced the Golden Graphics System, an integrated software package for the production of contour maps and three-dimensional surface plots using the IBM Personal Computer line.

The graphics package reportedly permits users to visualize the implications of multivariate data. It consists of five applications with functions that include the ability to create XY graphs, bar charts, pie charts, line graphs and scatter plots.

The software is said to be able to create plots from plotting commands that have been placed in a data file and to give the ability to create a regularly spaced grid from irregularly spaced data.

The package costs $200.

Golden Software, P.O. Box 281, Golden, Colo. 80402.

■ Computer Innovations, Inc. has introduced its introducing C software package for self-paced instruction in C language programming using the IBM Personal Computer.

The program is said to consist of a self-paced training manual and a C interpreter. The C interpreter provides the user with immediate feedback.

The training manual is modular and offers a reference section. When finished, the user will be able to write and understand C language programs and will know how to use the standard C library, Computer Innovations said.

The software requires IBM's PC-DOS 2.0 or higher and at least 128K bytes of internal memory.

The package costs $65.

Computer Innovations, 980 Shrewsbury Ave., Tinton Falls, N.J. 07724.

■ Control Information Systems, Inc. has announced that its Ruffle relational data base management system is now available for the IBM Personal Computer.

Continued on page 70

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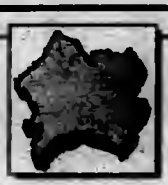

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MICROCOMPUTERS

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The product is said to include all features and capabilities of versions of Rtfile for Digital Equipment Corp. PDP-11 and VAX series computers.

Rtfile features reportedly include data base definition, CRT display form generation, transaction processing, list processing and report generation.

The single CPU price of Rtfile for the PC-DOS operating system is $500. A site license to allow the user to run the software on all on-site CPUs is $5,000. A corporate license for multiple designated sites is $10,000.

Comtel Information Systems, 4330 East-West Highway, Bethesda, Md. 20814.

■ Softcraft, Inc. has announced Rtrieve, menu-driven report writer software for users of Softcraft Xtrieve data base management software on the IBM Personal Computer, Personal Computer XT, Personal Computer AT and Texas Instruments, Inc. Professional computer.

Rtrieve reportedly allows data to be generated in user-defined formats for custom-designed reports, form letters, statements and other applications.

Rtrieve costs $95 for a single-user version and $175 for a local-area network version.

Softcraft, P.O. Box 2602, No. 917, Austin, Texas 78766.

■ Hewlett-Packard Co. has announced the HP 30555 software that reportedly links the HP 3421A or 3497A front-end data acquisition system to the HP Touchscreen or Touchscreen Max or to the IBM Personal Computer, Personal Computer XT and AT.

The product is said to allow personal computer users to gather data on up to 20 channels with the HP 3421A for small to medium applications and up to 100 channels with the HP 3497A for medium to large applications.

The software is reportedly menu driven to allow users to quickly set up experiments and acquire, store and analyze their results. The microcomputer and the data acquisition front end communicate via an HP-IB interface (IEEE 488).

The HP 30555 software costs $400 for the HP 3421A and $500 for the HP 3497A. For the HP Touchscreen and Touchscreen Max, the 30555 requires the HP 14057AA I/O library, which costs $295. For the IBM Personal Computer series, the product requires the HP 61602AA I/O library and HP-IB card, at $395.

HP, 1820 Embarcadero Road, Palo Alto, Calif. 94303.

■ Real Time Computer Science Corp. has announced the enhancement of its RTCS/UDI software to support the IBM Personal Computer AT.

The RTCS/UDI applications development software is said to be an implementation of Intel Corp.'s Universal Development Interface specification for Microsoft Corp.'s MS-DOS operating systems. The UDI specification reportedly allows programs written for one operating system to run on other systems compatible with the UDI.

RTCS/UDI reportedly contains all 21 of the Intel UDI procedures. It runs on top of MS-DOS and IBM's PC-DOS and allows MS-DOS and PC-DOS commands to be accessed from a UDI command line.

The software requires two 360K-byte diskette drives or one diskette drive and one hard disk drive and 256K bytes of internal memory. It costs $500.

Real Time Computer Science, Unit E, 1500 Pigeon Road, Camarillo, Calif. 93010.

■ Graphic Communications, Inc. has announced enhancement of its Graphwriter software for the IBM Personal Computer line.

Graphwriter now reportedly supports the Hercules Computer Technology graphics card, the Hewlett-Packard Co. Laserjet printer, Integral Data Systems, Inc.'s Prism color printer and the Houston Instrument DMP29 plotter.

Version 4.3 also reportedly can change chart text to a variety of different type fonts. Graphwriter uses preprogrammed formats and is menu driven.

Version 4.3 requires 192K bytes of internal memory.

Graphwriter costs $595. Registered users can upgrade to the new release for $25.

Graphic Communications, 209 Fifth Ave., Waltham, Mass. 02254.

■ Sof-Tools has announced Engineering Tool Kit (ETK) software for Apple Computer, Inc.'s Macintosh.

ETK reportedly allows the recording of numeric engineering data and generation of statistical analysis reports from the data. Features are said to include multiple linear regression, analysis of variation reports and a scientific calculator with logarithmic, arithmetic and trigonometric computation capabilities. The software also includes base conversion capability of up to base 16, according to the vendor.

The package requires the Microsoft Corp. Basic 2.0 operating system running on a Macintosh.

ETK costs $99.

Sof-Tools, P.O. Box 8751, Boise, Idaho 83702.

■ Infotools has announced an enhanced version of its Bakup storage management software that backs up hard disk drives resulting in the IBM Personal Computer XT and AT.

Release 3.0.4 reportedly supports any size hard disk, is copy protected to allow portability between installations and uses the keystroke buffer resident in the IBM Personal Computer.

Bakup 3.0.4 is said to run on any version of IBM's PC-DOS or Microsoft Corp.'s MS-DOS Version 2 or 3. The software requires 256K bytes of memory to support hard disks of up to 20M bytes. It needs 384K bytes to support 30M-byte and larger disks.

The product costs $149.95.

Infotools, 16044 S. De Anza Blvd., Cupertino, Calif. 95014.

■ Readiware Systems has introduced Readiwriter document formatting software for the IBM Personal Computer.

Readiwriter Version 2.0 reportedly was designed for use in creating

Continued on page 75

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Continued from page 70

forms, letters, books or manuals. Its formatting capabilities include proportional spacing with microjustification, parametric printer definitions and user-level compatibility with IBM's DCF and Script languages.

Readiwriter requires at least 128K bytes of internal memory and two diskette drives. It costs $395.

Readiware Systems, P.O. Box 515, Portage, Mich. 49081.

■ **Liberty Bell Software Co.** has announced **Dwindow**, software that is said to provide users with a windowing index system for Ashton-Tate's Dbase II Versions 2.4 and 2.41 on the IBM Personal Computer, Personal Computer XT and AT.

Written in assembly language, Dwindow is said to add 25 window-ing syntax statements to Dbase II. Specific improvements make Dbase's line zero available for SAY or GET statements and line 25 available for SAY statements and provide a split screen modify command and syntax error processing compatibility, according to the vendor.

Dwindow reportedly runs 32 full screens per second and occupies 9K bytes of memory. It requires IBM's PC-DOS Version 2.0 operating system and 192K bytes of internal memory.

The product costs $135.

Liberty Bell Software, P.O. Box 69306, Suite 150, 4640 S.W. Macadam, Portland, Ore. 97201.

■ **Major Software** has introduced **Pascalpac**, multifunction software to aid programmers working on the IBM Personal Computer in Microsoft Corp.'s Pascal or Borland International's Turbo Pascal.

Pascalpac reportedly can generate a cross-reference table of all symbols in a Pascal program, except reserved words. It allows programmers to browse through a cross-reference table and the associated Pascal program at one time.

The software also is said to contain a listing program for printing Pascal programs, cross-reference tables or any other text file.

Pascalpac is priced at $195.

Major Software, 66 Sylvian Way, Los Altos, Calif. 94022.

■ **CMBS Technologies** has announced enhancement of its Wordpatch printer interface software for use with Micropro International Corp.'s Wordstar program on IBM Personal Computers and machines running Digital Research, Inc.'s CP/M operating system.

Wordpatch, Version 3, reportedly has been rewritten in the C language for greater speed. Also new is support for printers such as the Epson America, Inc. MX-80 and JX-80, Anadex, Inc. WP-6000, Star Micronics Co. Gemini and others.

The program is said to feature the ability to expand Wordstar's printer instruction area and to write the appropriate instructions for the specified printer into that expanded instruction area.

It also can rename Wordstar program files to show that they have been affected by Wordpatch.

The software costs $49.95.

CMBS Technologies, P.O. Box 5061 Walnut Creek, Calif. 94596.

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allows programmers to manipulate strings. Also added are addressing options, including one that allows users to pass and locate a common block in the default data segment. The Alias function aids interlanguage calling by allowing programmers to get around Fortran's six-character limit on program names. Other addressing options in the Pascal release allow the return of the full address of a procedure or function.

Among enhanced utilities, the two languages reportedly give the capacity to let programmers create, organize and maintain object module libraries. Another added function in both releases packs executable files, reducing their size and decreasing loading time.

The enhanced versions of Microsoft Pascal and Fortran are priced at $300 and $350, respectively. Both require systems with at least 192 bytes of internal memory and two double-sided diskette drives.

Microsoft can be reached at Box 97200, 10700 Northup Way, Bellevue, Wash. 98009.

MICRORIM from page 63

ware, the vendor said.

Microrim is developing a local-area network version of R:Base 5000 for the IBM PC Network, Johnson said. The package is scheduled for September shipment and will be priced at $2,100 per network.

The company will continue to sell R:Base 4000, a spokesman said. Registered R:Base 4000 users can upgrade for $245 through July 31.

Microrim is located at 3380 146th Place S.E., Bellevue, Wash. 98007.

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21

TOOLS from page 75

■ Global Technologies Corp. has introduced two software development tools for use with Ashton-Tate's Dbase II and Dbase III on the IBM Personal Computer line, including the Personal Computer AT.

One of the products, the Voice Command System, is a hardware and software combination that is said to offer voice recognition capabilities to Dbase II and III programmers.

Users may control the Edix and Dbase functions of Dbase programming, as well as several of the Dbase utilities, by speaking the commands they would otherwise type, Global Technologies said.

Also available is Dbase Configured Programmers Editor, which reportedly enables the editing and viewing of four different command files at once.

The Dbase Configured Programmers Editor carries a price of $345. The Voice Command System is priced at $695.

Global Technologies, 16572 E. Louisiana Drive, Aurora, Colo. 80017.

COMMUNICATIONS

■ AST Research, Inc. has introduced its AST-SNA/Cluster and AST-BSC/Cluster, packages that reportedly allow an IBM Personal Computer to emulate an IBM 3274 cluster controller.

Such emulation is said to permit the Personal Computer to communicate with a remote IBM mainframe using either Systems Network Architecture/Synchronous Data Link Control or Binary Synchronous Communications line protocols.

Each controller package reportedly supports up to four Personal Computers or asynchronous terminals attached to the single Personal Computer running the package.

Each AST cluster package includes four built-in asynchronous communications ports and RS-232C connector cables.

The AST-SNA/Cluster costs $2,190; the AST-BSC/Cluster costs $1,990.

AST, 2121 Alton Ave., Irvine, Calif. 92714.

LIMIT from page 68

bytes is mapped out for graphics displays and other odds and ends in the IBM Personal Computer and most MS-DOS machines. (There are exceptions; the Texas Instruments, Inc. Professional Computer can address 768K bytes.)

Naturally, there are any number of ways to get around this barrier. The most common is setting up additional memory with a random-access memory disk, which speeds things up considerably but does not offer the instant gratification of direct address.

Some add-on board manufacturers supplement this approach by remapping memory for specific application packages. Dallas-based Mega-Omega Systems, for example, pushes the video address up 256K bytes and writes software for memory hogs, such as Lotus' Symphony, that lets the packages grab 896K bytes in extended mode.

Another tack, widespread in the 8-bit world, is bank switching. An 8-bit processor such as Zilog, Inc.'s Z80 can directly address only 64K bytes, so techniques were developed to link larger files and programs divided into 64K-byte chunks dynamically.

Of course, developers must write or modify these programs with these memory management schemes in mind.

Whatever pixie dust the software wizards throw at the problem, and whatever the practical upward range is, the benefits will be limited unless there's a single MS-DOS extended-memory development standard backed by Microsoft and everyone else.

If there's a standard in the works, however, most software firms were unaware of the details early this month.

On a quiet night, you can almost hear developers whimpering at the thought of meeting yet another standard — they're already grappling with IBM's Topview or Virtual Device Interface or with Microsoft Networks or whatever.

But the alternative is chaos, and it would be nice to minimize that, for once. And crossing the memory barrier could give thousands of MS-DOS programs new life on the next-generation machines built around the 80286 chip, which can directly address 16M bytes.

KAYPRO from page 63

bit-mapped display is said to feature a resolution of 640 by 200 pixels.

The product includes a detachable keyboard. In its standard configuration, it comes with an RS-232 serial port, one expansion port and a built-in rechargeable battery pack. It reportedly runs for four hours before its batteries need to be recharged.

The Kaypro 2000 comes bundled with Microsoft Corp.'s MS-DOS 2.11 and GW-Basic and with Micropro International Corp.'s Wordstar, Mailmerge, Infostar Plus and Calcstar, Kaypro said. Users reportedly can run software designed for the IBM Personal Computer or Data General Corp.'s Data General/One on the Kaypro 2000.

Kaypro also plans to offer peripherals for the new system, including a base unit, a disk adapter and modem.

The Kaypro 2000's base unit is said to contain a 5¼-in. disk drive that can read or write standard IBM diskettes. It also includes a serial and parallel port and two expansion slots for Personal Computer cards, the firm said.

The base unit, which will cost $795, reportedly can also accommodate an additional 5¼-in. disk drive, a 3½-in. disk drive or a hard disk drive. Kaypro said it will rely on third-party vendors to supply 3½-in. drives and hard disk drives for the unit.

By adding a specially designed Kaypro card to a Personal Computer, users will be able to connect a Kaypro to a Personal Computer and use the IBM's drive as a second disk drive, the company said.

The disk adapter will be priced at $115, while the Kaypro card for the Personal Computer will be priced at $45, a spokeswoman said. The firm will also offer a 1,200 bit/sec. modem for $295, a spokeswoman said.

The company plans to begin shipping the Kaypro 2000 in late May or early June.

Kaypro is located at 533 Stevens Ave., Solana Beach, Calif. 92075.

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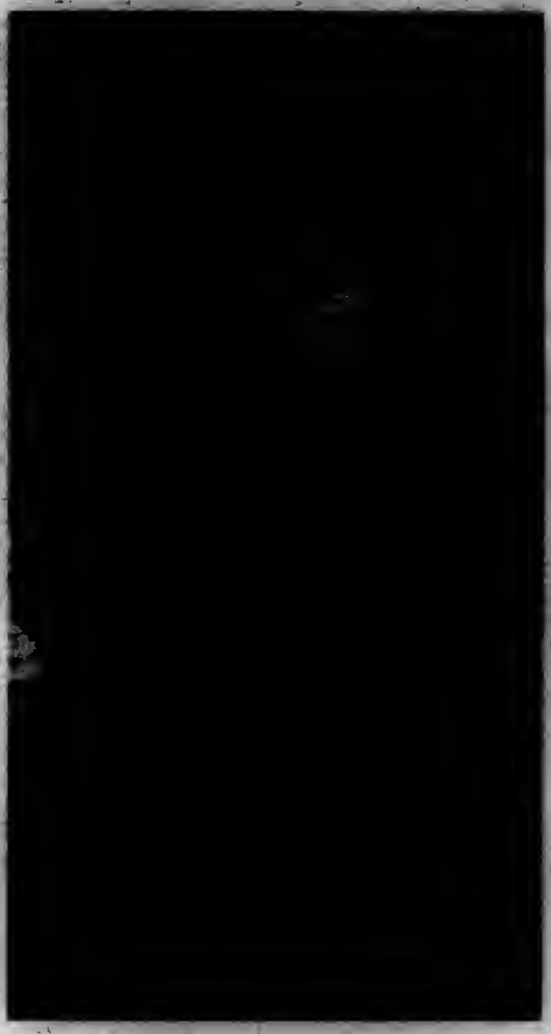

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April 17
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Chicago, IL
May 8
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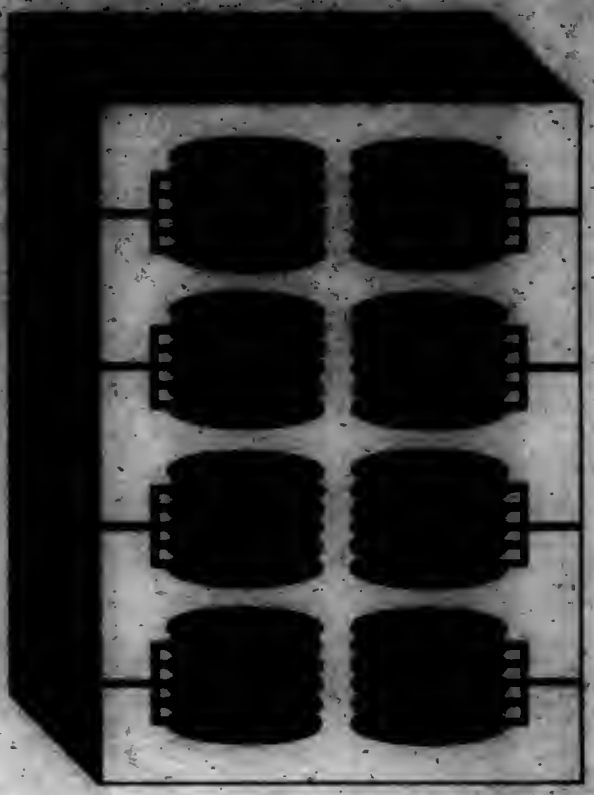

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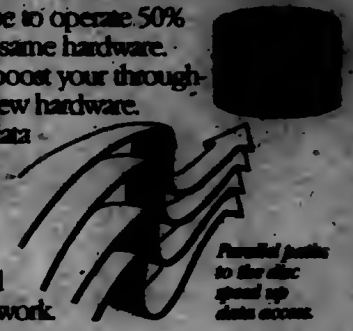

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COMMUNICATIONS

DOUG STREAM
John Dix
CW Senior Editor

Local packet nets heat up market

Value-added network carriers such as GTE Telenet Communications Corp. and Tymnet, Inc. may face stiff competition from the former Bell operating companies, which, under relaxed regulations, are beginning to offer local packet-switching services.

The Federal Communications Commission recently loosened restrictions of its Second Computer Inquiry decision to permit the regulated local telephone companies to offer protocol conversion. Computer Decision II distinguished between basic and enhanced services and concluded that AT&T and its then-affiliated Bell companies could only offer enhanced services through separate subsidiaries.

Under the revised decision, the former Bell operating companies can offer packet-switching services with asynchronous-to-X.25 protocol conversion as basic regulated services. These networks can only be offered locally within Local Access and Transport Areas (Lata). The former Bell operating companies cannot carry traffic between geographic Latas.

The North American Telecommunications Association, a group that follows competitive developments in the industry, reported that Pacific Telephone and Telegraph Co., Southwestern Bell Telephone Co., New York Telephone Co., New Jersey Bell Telephone Co., Southern Bell Telephone and Telegraph Co. and Michigan Bell Telephone Co. "have all indicated they plan to include protocol conversion and packet switching in upcoming tariffs."

Establishing the services as regulated offerings will enable the telephone companies to market the networks along with their standard services. This means all customer information — including customer names, addresses, billing histories and equipment inventories — are available to the salespeople peddling the packet nets. In addition, because the services are regulated, standard network facilities can be used.

See NEAT page 85

Trim the cost of talking

Look at phone bill for telecom savings

By Paul Korzeniowski
CW Staff

TROY, N.Y. — Interested in a simple way to cut communications costs? Then take a close look at your telephone bill.

Doug Mitchell, president of Consultel, Inc., a Wayland, Mass., communications consulting firm, claimed that 80% of all businesses spend too much money for telephone services because most phone bills contain numerous errors.

> *"An accounting system clearly identifies telephone abusers."*
> — Doug Mitchell, Consultel, Inc.

Mitchell made the claim at "Turning Telephone Costs into Profits," a two-day seminar sponsored by Rensselaer Polytechnic Institute of Troy, N.Y., and held recently in several cities.

Auditing telephone equipment is a simple first step in trimming telephone costs. "Often, when a company alters its telephone system, equipment or lines are eliminated," Mitchell noted. "Sometimes, these changes are not noted by the phone company. Consequently, the company will be billed for lines that are no longer in use."

The seven regional holding companies can supply a company with a computer tape that lists all telephone equipment. The tape's name differs with each former Bell operating company; some tape names include Cris, Feab and SNB19. "Companies should attempt to get these tapes as soon as possible, for they are property of AT&T," Mitchell warned. "When AT&T starts billing customers directly rather than relying on the [divested Bell operating companies], it will be more difficult for a company to get a copy of the tape."

This tape can be used to produce a printout with code names or numbers for different types of equipment. For example, TLN represents manual-type tie line termination point. Mitchell noted two methods for translating these codes. A book called the *Uniform Service Order Codes* is available from the former Bell operating companies which lists the codes, and "there are plenty of retired Bell employees who are able to translate the codes," the consultant said.

Once the audit is completed, a company should compare its list of equipment with the telephone company's list. "A company is entitled to retroactive payment for any billing errors," Mitchell

See COSTS page 84

NSF grants Columbia, others telecommunications funds

NEW YORK — Columbia University will receive $20 million in the next five years from the National Science Foundation to operate a center for research and education in telecommunications.

Columbia's center will be part of the university's School of Engineering and Applied Science. Research will center on telecommunications systems, services and networks, and much of the work will be conducted with the aid of Columbia's Magnet network, which handles data, facsimile, graphics, voice and video communications.

The research effort will be led by Professors of Electrical Engineering Mischa Schwartz and Thomas Stern. Eighteen Columbia faculty members from four engineering departments and a number of students will take part in the project.

Five other schools received awards: MIT, University of California at Santa Barbara, University of Delaware, University of Maryland and Purdue University.

- Ranax has announced a communications controller that can emulate both IBM's 3274 and 5251 Model 1 terminals/83
- Xyplex has introduced the Xyplex Step 1 communications system that is designed to link a DEC VAX computer to up to 16 terminals/83
- Racal-Milgo has unveiled a stand-alone version of its Communication Management series of network management systems/83
- Maniage has introduced a device that multiplexes eight asynchronous channels over a single fiber-optic cable/86

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Voice/Data Communications/82
Protocol Converters/84
Multiplexers/Modems/86

Search for E-Mail suitor fails in initial round, USPS reports

WASHINGTON, D.C. — The U.S. Postal Service (USPS) announced recently that its initial effort to divest itself of its electronic mail service has failed to turn up any acceptable suitors.

Several firms submitted acquisition proposals after the USPS' Electronic Computer Originated Mail (E-Com) service was put on the block last October, but none of them were acceptable, the USPS reported.

Discussions with other firms that have expressed an interest in the service continue, and for a limited period, the USPS will evaluate new offers as well.

In late 1984, E-Com had 1,000 customers and was carrying about two million messages a month, according to a report by Booz-Allen Acquisition Services, Inc.

The report indicated that the Postal Service has invested more than $50 million on the system, including the construction of special facilities and equipment in 25 serving post offices.

The Postal Service has been attempting to sell the service to private industry since last year, saying the "E-Com system could be operated more effectively by a private [vendor]."

Applitek introduces enhanced line of local-area networks

WAKEFIELD, Mass. — Applitek Corp. has enhanced its Unilan line of local-area networks adding an Ethernet bridge, an RS-449 interface, a 32-port version of its NI10 network interface unit and support for a number of synchronous protocols.

The line of bus-oriented local-area networks reportedly supports baseband, broadband and fiber-optic media, transmission speeds up to 10M bit/sec.

The Ethernet bridge is said to allow an Applitek network to connect to a number of Ethernet-like networks. Data packets destined for remote Ethernet networks are transmitted at speeds up to 4M bit/sec. The bridge reportedly can operate on any channel of a broadband network and supports subsplit, mid-split, high-split or dual-cable plant.

The RS-449 interface provides synchronous connections for devices using CCITT LAP B data-link-level protocol. On top of LAP B or an Ethernet data link layer, the product provides a file transfer facility with a transmission speed of 56K bit/sec.

The 32-port version of the NI10 doubles the maximum number of ports the device can support and provides each port with a maximum

See NETS page 85

Codex adds synchronous modem, cuts prices on 2231, 2232 models

MANSFIELD, Mass. — Codex Corp. has added a 9.6K bit/sec. synchronous modem to its product line and has cut prices on its 2,400 bit/sec. modems.

A vendor spokesman said that the Codex 2206 operates in either two-wire half-duplex or four-wire full-duplex modes. The product uses double sideband, eight-phase, quadrature amplitude modulation.

Supports self-testing

The modem falls back to 7.2K or 4.8K bit/sec. transmission with poor line conditions. According to the vendor, the Codex 2206 features self-testing and local analog, remote digital or remote analog loopback.

The Codex 2206, available now, sells for $1,995.

Codex cut the price of its 2231 by 25% and its 2232 by 20%. Both full-duplex modems are said to support asynchronous and synchronous transmission and are switch selectable to transmit data at either 1,200 or 2,400 bit/sec., the vendor said. The 2232 includes automatic dialing software.

The 2231 sells for $795; the 2232 costs $895.

Codex is located at 20 Cabot Blvd., Mansfield, Mass. 02048.

Wolfdata rolls out PM1600 designed for X.25 networks

CHELMSFORD, Mass — Wolfdata, Inc. has announced PMC-1600, a four- to 16-port communications processor and data concentrator designed for X.25 networks.

The Motorola, Inc. 68000 microprocessor-based product accommodates asynchronous and synchronous X.25 devices and concentrates up to 18 channels into one or more 64K bit/sec. X.25 lines.

PMC-1600 is said to feature support for multiple protocols, dynamic port configuration, programmable network diagnostics and routing and port-to-port switching. Protocols supported include synchronous high-level data link control, CCITT X.25 Level 3 and asynchronous protocols.

The product's port-to-port switching enables a user to design a network with 16 personal computers or workstations. The product's multiple virtual circuit capability enables one X.25 cluster to communicate with a second cluster over a single telephone line. The communications processor was designed to support file transfer software between personal computers or from a personal computer to a host.

The products call control capabilities include abbreviated addressing, automatic calling capability and nut-addressing.

PMC-1600 costs $5,695.

Wolfdata is located at 187 Billerica Road, Chelmsford, Mass. 01824

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Call **1-800-235-6630** now and we'll tell you even more about STEAMER. And don't wait. STEAMER'S going to do to all other stat muxes and data compression machines what the easy open pull top can did to can openers. Make 'em obsolete.

On March 4, 1985 Datagram revolutionized the data communications industry with STEAMER.

Datagram We make networks work harder.

CONTROLLERS

■ Renex Corp. has announced TMS-One, a communications controller that can emulate both IBM's 3274, which is used primarily with IBM mainframes, and IBM's 5251 Model 1, which is used for IBM's System/34, System/36 and System/38.

A vendor spokesman said the TMS-One handles up to 32 physical ports and five sessions for each port. The product supports binary synchronous, asychronous and Synchronous Data Link Control protocols.

TMS-One supplies terminal emulation capabilities for more than 150 types of terminals, including IBM's 3270 series, Digital Equipment Corp.'s VT100 and Tektronics, Inc.'s 4100 line. The product supports password security and costs $7,990.

Renex, 1513 Davis Ford Road, Woodbridge, Va. 22192.

VOICE/DATA COMMUNICATIONS

■ Xyplex, Inc. has announced the Xyplex Step 1 communications system that is designed to link a Digital Equipment Corp. VAX computer to up to 16 terminals. RS-232 asynchronous devices can reportedly be connected to Step 1 via eight-port terminal cluster controllers, which can be rack-mounted or distributed.

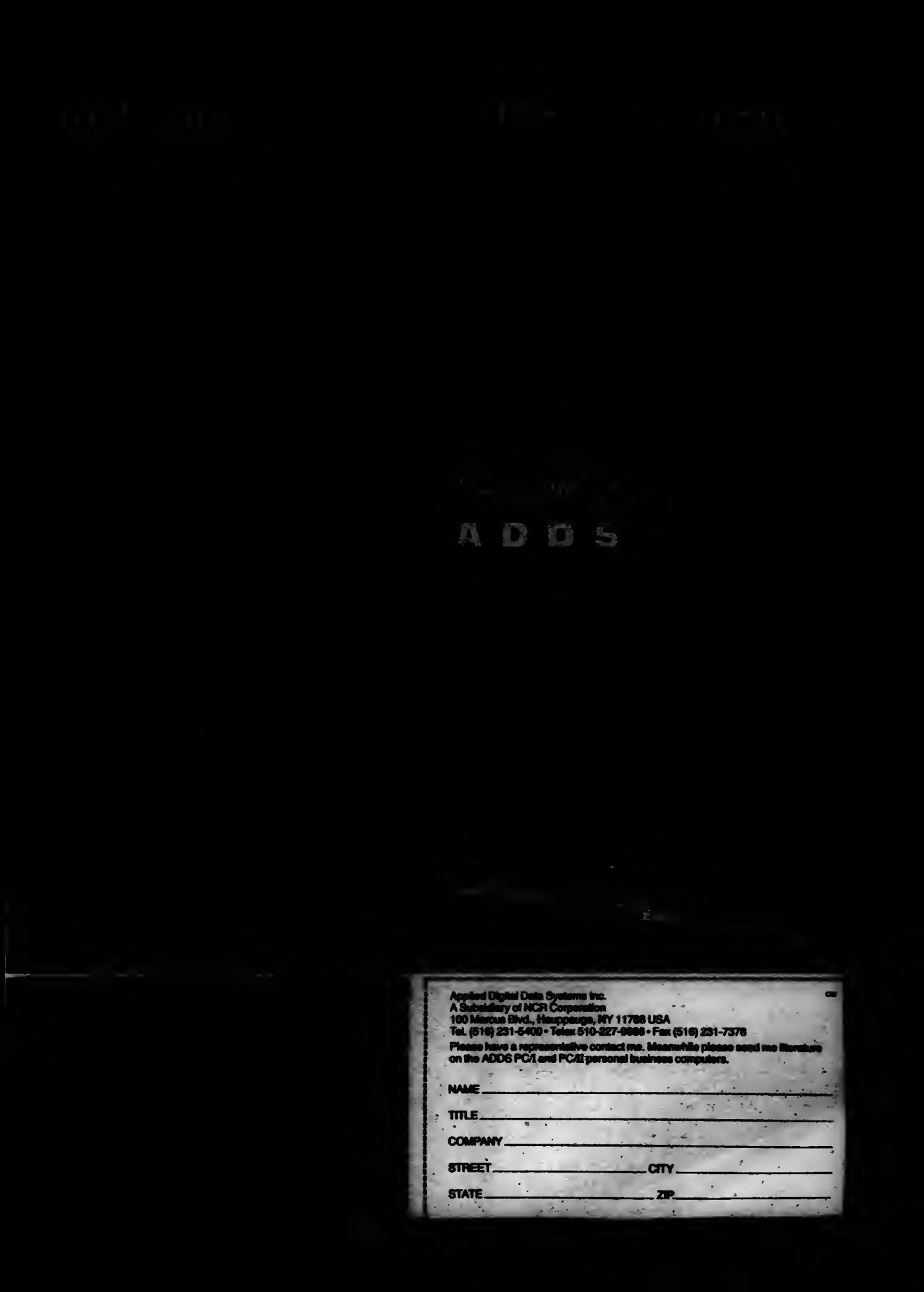
Reportedly, front-end processing provided by the product reduces the VAX CPU time dedicated to communications overhead. The product can be upgraded to the full Xyplex system with a single board host interface added to the Xyplex Step 1 to provide switching for multiple VAX users. Xyplex Step 1 is available for $8,100 for 16 terminals and $2,200 per each eight additional ports.

Xyplex, 100 Domino Drive, Concord, Mass. 01742.

■ Bacal-Hilgo has announced System Performance Analyzer (Spax), a stand-alone version of its Communications Management Series of network management systems.

Spax monitors node channel data

Continued on page 84



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COSTS from page 81

noted. In addition to identifying nonexistent equipment, the audit supplies a company with an up-to-date list of its equipment.

Eliminating excess telephone trunks represents a second method of decreasing telephone costs. How does a company determine if it has too many trunks? "Don't expect your telephone bill to provide an accurate assessment of trunk usage," Mitchell maintained. "AT&T takes the total (number of) minutes (that) you use all trunks and averages that number for each trunk."

For example, in one month, five trunks may carry a total of 200 hours of conversation. A telephone bill will show approximately 40 hours of talking for each trunk.

With least-cost routing, a feature found on most private branch exchanges, telephone systems route calls first through the cheapest trunk.

If that trunk is full, the call spills over to a second trunk. "The primary trunk obviously carries the bulk of the telephone traffic," the consultant said.

Small portion of calls

So, the secondary trunks may carry only a small portion of the calls. Mitchell recommended graphically depicting trunk usage. The picture may illustrate the busiest calling periods and show how seldom some trunks are used.

The customer's type of business determines if a trunk should be eliminated. "An airline company found that 5% of the incoming callers were hanging up rather than waiting on hold," he said. "I recommended that the company install more telephone trunks. Each time a caller hung up represented potential lost revenue." Companies for which phone calls are not as vital may be able to eliminate seldom-needed trunks.

A telephone call accounting system also helps to trim telephone costs. A call accounting system identifies every employee's long-distance calls. "An accounting system clearly identifies telephone abusers," Mitchell noted. "Usually, they will stop making a number of calls when they are warned. If they persist in making unnecessary long-distance telephone calls, one should try to find a way to charge them for the calls."

Often, a call accounting system can act as a deterrent. Mitchell recommended publicizing the purchase of one of these systems.

"Word will quickly travel and some abusers may be unwilling to make those long-distance calls," the consultant said.

Continued from page 82

from terminals, modems or private branch exchanges at a central or remote site and enables a user to analyze network performance and expansion requirements.

A vendor spokesman said that the software supplies reports for on-line use, response times and alarm conditions by monitoring RS-232 interfaces. Reports can be displayed on a terminal or a printer.

The product's alarm feature supports three alarm types: user-selectable response time thresholds, negative acknowledgment conditions and Span card status.

Span can be integrated with Excel-Milgo's Communication Management Series (CMS) network management systems. With CMS, the system monitors analog as well as digital data.

The product costs $32,000.

Excel-Milgo, 8600 N.W. 41st St., Miami, Fla. 33166.

PROTOCOL CONVERTERS

Systar Corp. has announced its Gateway 34/36/38 protocol converter, which supplies IBM Personal Computers with IBM 3361 terminal or 3364 printer emulation.

One Gateway 34/36/38 enhancement includes a write-to-diskette facility that enables a user to route printer data to a diskette. While data is being sent to a diskette, a user can work with the Personal Computer.

Another enhancement reportedly supports a number of communications ports including an asynchronous port or an internal modem.

Gateway 34/36/38 costs $750 for the file transfer software, $32,000 for communications front end and $195 for each Personal Computer copy.

Systar, 1762 Technology Drive, San Jose, Calif. 95110.

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MULTIPLEXERS/MODEMS

■ Microm, Inc. has introduced Micro-8, a device that multiplexes eight asynchronous channels over a single fiber-optic cable.

The product supports transmission speeds up to 38K bit/sec. for each channel and has a maximum aggregate link speed of 160K bit/sec. Micro-8 features full-duplex operation, frequency shift keying modulation and support for data formats.

Micro-8 costs $1,595.

Microm, P.O. Box 275, 40 Midwest Road, Chicopee, Mass. 01014.

■ Anderson Jacobson, Inc. has announced AJ Data Modem/2400, a full-duplex, 2,400 bit/sec. modem.

A vendor spokesman said that the modem operates in either asynchronous or synchronous modes and transmits at speeds of 1,200 bit/sec. or 2,400 bit/sec.

The modem automatically adjusts to incoming data transmission rates. The product's diagnostic features include digital loopback, analog loopback and remote digital loopback.

AJ Data Modem/2400 costs $795 and is available in either rack-mounted or stand-alone models.

Anderson Jacobson, 521 Charcot Ave., San Jose, Calif. 95131.

HEAT from page 24

Some companies, however, are opting to offer the services through unregulated subsidiaries. This will remove the need to file service tariffs and will give added pricing flexibility.

Northwestern Bell Information Technologies, the unregulated subsidiary of Northwestern Bell Corp., has just announced the availability of its public packet-switch network (PTSN) service in Omaha. In June, a similar service is scheduled to be put over in St. Paul, Minn., and at a later date service will also be provided in Des Moines, Iowa.

Service not regulated

Because the service is not regulated, the switching hardware cannot be located within the central office switching centers used by Pacific Northwest Bell Telephone Co. to provide standard telephone services. The node in Omaha will be installed in a Northwestern Bell Information Technologies office, according to Don Lewis, product manager of the service.

But besides providing pricing flexibility, Lewis said unregulation enables the company to install packet assembler/disassembler equipment on customer premises, providing the most economical type of network access for large companies. For firms that cannot justify support of an on-premise packet node, Northwestern Bell's PTSN, like most other packet net services, can be accessed in three ways: through dial-up circuits; with analog leased lines; or via digital private lines.

The rate structure for the service is also similar to established value-added networks, Lewis said. Dial-up access carries an hourly connect fee and a charge for packet transmission. The private-line options have a flat monthly port fee and a throughput charge. Lewis claimed the rates for PTSN are lower than those for nationwide packet networks because those carriers have to offer averaged, distance-insensitive prices.

Customers that have concentrated local traffic might find these new services attractive. Some of the major questions remaining are, How will the new services compare with established, experienced carriers? What kind of gateway facilities will be established between the local telephone company services and long-haul services provided by companies like GTE Telenet and Tymnet?

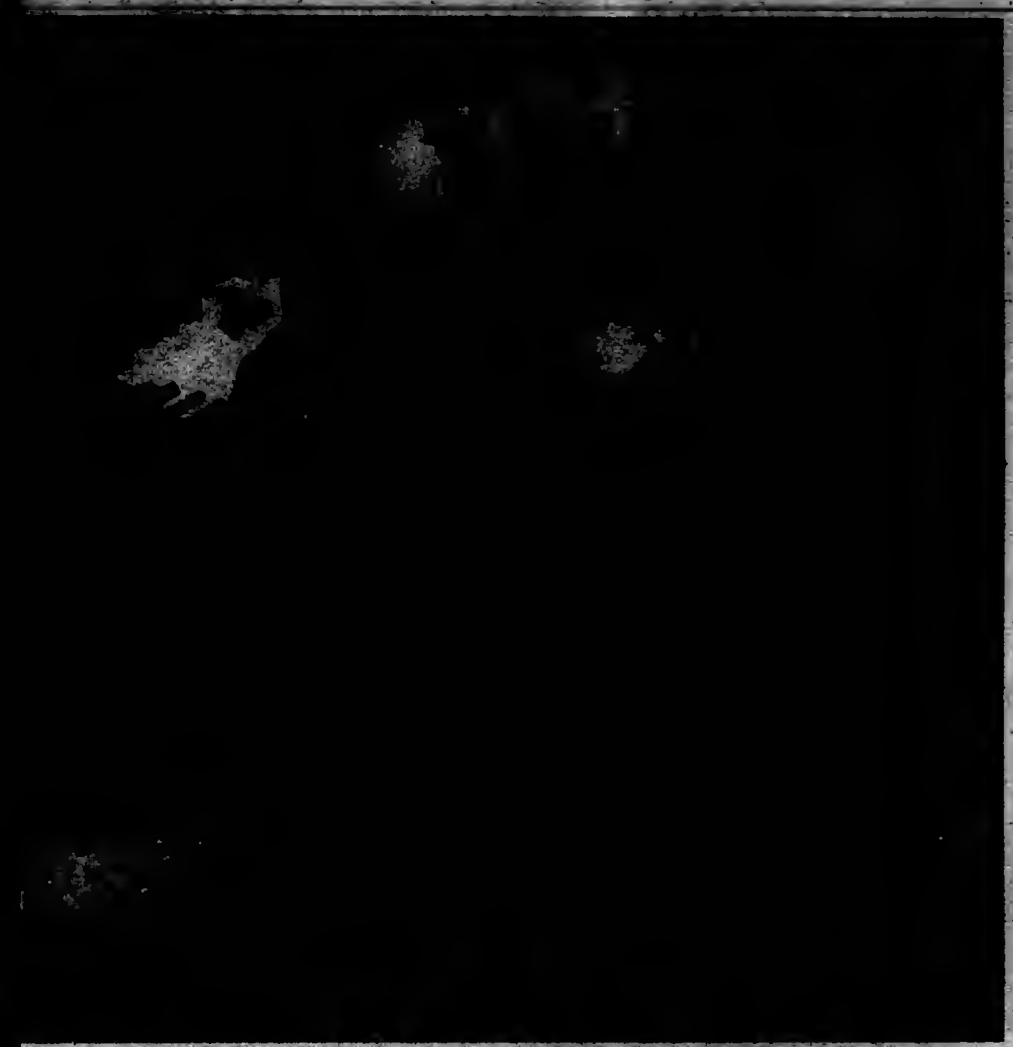
NETS from page 21

19.2K bit/sec. transmission speed.

Protocols supported include Synchronous Data Link Control, High-Level Data Link Control and bisynchronous, according to the vendor.

The Ethernet bridge sells for $11,500 for baseband or fiber-optic nets and $12,700 with broadband units. Prices range $450 per port for baseband or fiber-optic networks and $470 per port for broadband networks.

Applitek is located at 107 Audubon Road, Wakefield, Mass. 01880.



also be integrated with most of the stand alone PCs, word processors and local area networks your office already uses. And with most of the new automation equipment you'll use in the future.

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Communications Systems

SYSTEMS & PERIPHERALS

NCR 9400 beats 9300's processing rate by 50%

By Dennis Redmond
CW Staff

DAYTON, Ohio — NCR Corp. has unveiled a 32-bit supermini-computer that is said to provide a 50% increase in performance over its NCR 9300 32-bit computer. The machine reportedly is targeted at medium- to large-systems users of NCR or non-NCR interactive computer systems and multisystem environments with communications requirements.

The NCR 9400, which uses NCR's very large-scale integration technology, has a processing cycle speed of 150 nsecs, the company said. It comes with 1M byte of main memory; a 40M-byte Winchester disk drive, three CRTs, a 125 line/min printer and NCR's Interactive Transaction Executive operating system.

The system reportedly can support up to six users simultaneously in its basic configuration and is upgradable to a maximum of 210 users. It can be configured with up to 4M bytes of main memory and eight system peripherals, the vendor said.

Included in the Link-Level Communications Subsystem 2, an integrated communications controller said to support protocols such as TTY, International Standards Organization, asynchronous, integrated remote batch subsystem and distributed data processing. IBM's Systems Network Architecture can be supported with the addition of a front-end processor, the vendor said.

The basic NCR 9400 costs $67,000. Current users of the NCR 9300 can field upgrade their processors to a 9400 for $19,805.

NCR is located at 1700 S. Patterson Blvd., Dayton, Ohio 45479.

DEC's specialized VAX configurations debut

By Tom Shedel
CW Staff

MAYNARD, Mass. — Digital Equipment Corp. has unveiled three specialized packaged configurations of its top-end VAX 8600 supercomputer and a series of hardware options for the system. At the same time, the company said its version of the AT&T Unix operating system, called Ultrix-32, can now be used on the 8600.

The packaged configurations include the following:

■ An entry-level version of the 8600 aimed at users with limited floor space whose primary concern is expanding processing power. The configuration includes a single-processor 8600 with 8M bytes of main memory and integrated disk and tape drive controllers. The configuration supports either DEC's VAX/VMS operating system or Ultrix-32. It costs from $360,000 under VAX/VMS and from $365,500 under Ultrix-32, the vendor said.

■ The VAX 8600 Vaxcluster System Building Block configuration, designed to provide the nucleus of a Vaxcluster configuration based on the 8600 processor. The configuration includes a CPU with 8M bytes of main memory, a DEC HSC50 storage controller, an 8-node star coupler, connecting hardware and the VAX/VMS operating system. It costs $446,000, the vendor said.

■ A Vaxcluster Upgrade configuration designed to enable users to add an 8600 processor to an existing Vaxcluster system. It includes a CPU with 8M bytes of main memory, interconnection

See 8600 page 91

IBM scientists said they have developed the densest logic and memory chips ever built/98

■ Charles River Data Systems unveiled a ruggedized supermicrocomputer compatible with the VME bus/98

■ Apollo Computer has added an 86M-byte disk drive to its low-end DN550 workstation/98

■ An ion deposition, nonimpact printer debuts for IBM System/34, 36 and 38 users/98

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Gould introduces Unix-based text search processor

By Mitch Betts
CW Washington Bureau

BETHESDA, Md. — Gould, Inc.'s Computer Systems Division introduced at a recent press conference here an AT&T Unix-based external search processor called Hypersearch, which reportedly has an architecture optimized to search large textual data bases.

Gould said the coprocessor runs on Gould's Powernode 6000 and Powernode 9000 superminicomputers and consists of one board and integrated software to manage the text-search function. The product uses the UTX/32 operating system, which is Gould's version of AT&T Unix.

The vendor said Hypersearch provides text retrieval, inherent security features and data compression of 2:1 or 3:1 to reduce the number of disk drives required for data base storage.

The data compression that occurs dur-

See GOULD page 91

Nonstop EXT limits upgrading

HARD TALK
Jeffry Beeler
CW West Coast Bureau

With the introduction of its first low-end system for branch or district offices, Tandem Computers, Inc. has deviated somewhat from its traditional product and marketing strategy, according to industry analysts.

In the past, Tandem's procedure for acquiring new accounts has been to start with a small configuration and then, if the customer is satisfied with the results, modularly expand the system by attaching additional processors. To date, such a strategy has served the vendor "fantastically well," according to Tandem watcher Omri Serlin, president of Los Altos, Calif.-based Ron International Co.

Echoing Serlin's assessment is Stephen Smith, a vice-president at Paine Webber, Inc. "Modular multiprocessor systems [of the sort supplied by Tandem] are much better suited than conventional mainframes to the transaction processing market, where volumes may quintuple during the next 10 years," Smith said.

But with the just-introduced Nonstop EXT, the modular expansion usually associated with Tandem's systems family is relatively restricted, Serlin said. Unlike the Nonstop II and its TXP sister system, both of which can be configured with as many as 16 processors, the EXT supports only up to four CPUs in a single complex.

This "limited expandability," Serlin said, may make the entry-level Tandem system "a little less effective [than the Nonstop II or TXP] in terms of attracting new customers."

Because the EXT supports only a quarter as many processors as its sister systems, Tandem probably regards its latest product as just a "short-term solution" for the machine's intended users, he said. In the long run, the vendor will probably have to develop a follow-on system that costs even less than the current EXT and

See DEVICE page 91

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*Based on revenues for Ryder Truck Leasing and Services Division, which data inserted in Ryder Truck Rental, source 1983 Ryder System, Inc. Annual Report and Third Quarter Report, 1984

Charles River Data unveils supermicro

By Susan Schnorrenberg
CW Staff

FRAMINGHAM, Mass. — Charles River Data Systems, Inc. has unwrapped a 32-bit, VME-bus-based supermicrocomputer designed for harsh surroundings such as shop floors, remote locations or aboard ships. The Universe 2400 supports two Charles River operating systems: UNOS System V, an implementation of AT&T's Unix System V; and Uses, the company's AT&T Unix-compatible, real-time operating system.

The Universe 2400 has been designed to operate at temperatures up to 104 degrees Fahrenheit, to repel liquid and solid contaminants and to resist electrical connection failures that can be caused by vibration, rough handling and corrosive atmospheres, the vendor said.

The system is built around the 12.5-MHz Motorola, Inc. 68000 microprocessor and the VME bus. Its 32-bit internal data path and 4K-byte cache are said to enable the system to execute 1¼ million instructions per second with no wait states.

The system can be networked into Charles River's International Standards Organization-compatible local-area network, Universenet, by installing a VME bus network interface module available for $3,600.

Two models of the Universe 2400 are available. Both models can support up to 360M bytes of peripheral disk storage and can accommodate from four to 64 simultaneous users, the vendor said.

The basic Universe 2402F, which costs $9,900 in single quantities, is equipped with 512K bytes of random-access memory, a 20M-byte formatted Winchester hard disk and a 320K-byte floppy disk drive.

The Universe 2403FT, which costs $17,500 in single quantities, has 1M byte of main memory, a 35M-byte Winchester hard disk, a 320K-byte floppy disk drive and a 45M-byte ¼-in. streaming tape unit.

Charles River Data Systems is located at 983 Concord St., Framingham, Mass. 01701.

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IBM facility's chip research progressing

YORKTOWN HEIGHTS, N.Y. — IBM researchers reportedly have developed experimental memory and logic chips that offer a tenfold increase in circuit-packing density over chips currently in use. The development, IBM said, could lead to chips with more than 100,000 logic elements and memory chips capable of storing up to 16M bits of data.

Scientists at IBM's Thomas J. Watson Research Center here built the chips using a fully scaled, half-micron fabrication process based on an n-channel metal oxide technology. The process, which uses a focused beam of electrons to write the circuit patterns in a thin polymer film directly on the silicon surface, is said to be the first to use half-micron line widths throughout a chip.

Previously, IBM said, half-micron line widths had only been used in critical parts of a chip. As a result of the process, IBM said it was able to pack circuits into an area 16 times smaller than can be accomplished using 2-micron line widths, which are currently used in many chips.

IBM reports it has built both logic and memory chips. The memory chips use a one-transistor memory cell that IBM claims is the smallest memory array ever built. The 84-sq micron memory cell is about one-fourth the size of the memory cells used in 1M-bit chips, also under development at IBM.

The logic chips contain a variety of standard circuits. One such circuit, a programmable logic array, contains 1,700 transistors in one-tenth of a square millimeter of silicon. This, IBM claims, is roughly 2,500 times smaller than a dime.

Seek Systems offers tape unit

BELLEVUE, Wash. — Seek Systems, Inc. has released a triple-density tape drive with storage capacities of 800 bit/in., 1,600 bit/in. and 6,250 bit/in. that was designed for Wang Laboratories, Inc.'s VS series processor environments.

The tape drive, which is integrated with the Seek Storage Subsystem, costs $12,500. It operates on a standard Wang disk I/O processor, the vendor said.

The triple-density start/stop tape drive is dual-loading and can automatically adjust, verify and assign the proper read density, according to Seek Systems.

The 50-in./sec. unit can be mounted in the cabinet with up to two Winchester-type drives.

According to the vendor, the tape drive requires no scheduled preventive maintenance.

Additional information can be obtained from Seek Systems, which is headquartered in Suite A-5, 12401 Bel-Red Road, Bellevue, Wash. 98005.

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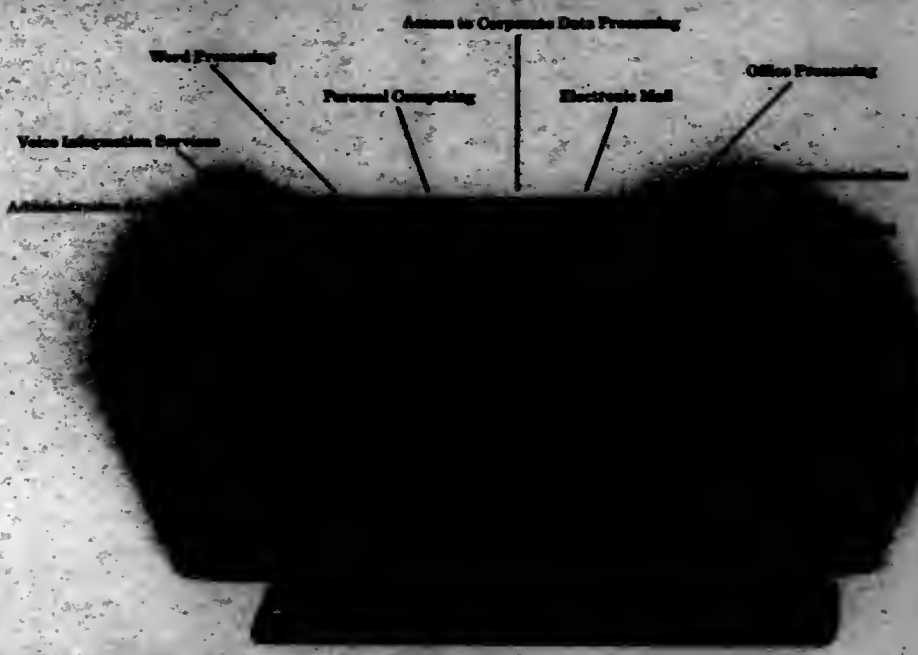

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GBT printer compatible with IBM

IRVINE, Calif.— General Business Technology, Inc. (GBT) has released an ion-deposition, nonimpact printer that is compatible with IBM System/34, System/36 and System/38 processors.

The GBT 6810XP — a Southern Systems, Inc. Mercurian printer with GBT's proprietary controller for compatibility with IBM machines — costs $69,800 and has a print speed of 60 page/min or 5,200 line/min and 240 by 240 dot/in. resolution, the vendor said. The unit can print horizontally or vertically, and it uses 8½-in. by 11-in. or 8½-in. by 14-in. paper. The printer can use smaller type sizes so that material normally printed on standard 11-in. by 14-in. computer paper can be printed on 8½-in. by 11-in. cut sheets, the vendor said.

The printer has a resident 256-char. set with subsets having up to 65 language variations for accents, subscripts and superscripts. Two online fonts are standard; eight are optional. User features include self-test diagnostics; status display panel; user-selectable length, number of copies, font, forms overlay buffer and top and left margins.

An optional forms overlay buffer — which costs $3,600 — permits loading a complete form image, including rotatable alphanumerics, from the computer memory. Both standard forms, such as Internal Revenue Service schedules and insurance documents, as well as custom forms, can be used, with up to four forms used at the same time.

The printer's ion cartridge has a 125,000 page life, the vendor said. More information can be obtained from GBT at 1001 McGaw Ave., Irvine, Calif. 92714.

System 86 released for CAD/D applications

LANDOVER, Md. — Maxam Technologies, Inc. has unwrapped its System 86 computer-aided design and drafting (CAD/D) system — based on Hewlett-Packard Co.'s HP 9000 series supermicrocomputer running under HP's Basic 3.0 operating system — that was designed for architectural, engineering and construction industries.

The stand-alone, single-workstation configuration System 86 costs $30,900 and consists of a Motorola, Inc. 68010-based 32-bit microprocessor with 1M-byte internal memory, a 19-in. color design monitor, a 13-in. color command monitor, a keyboard, two-button mouse and dual-diskette drives and an ink-jet printer for text and graphics, all of which is housed in a workstation desk.

Multiples of the System 86 can be interconnected in a network with a shared data base and common peripheral devices, the vendor said.

Architectural and engineering drawings generated on the System 86 may be reformatted for direct transfer into Intergraph Corp. and Auto-Trol Technology Corp. minicomputers in the data base format of these systems, according to the vendor. The data can be transmitted via magnetic tape for both those systems, and the Intergraph system can also receive data through a modem over the phone.

More information is available from Maxam Technologies, 6301 Corporate Drive, Landover, Md. 20785.

DATA STORAGE

■ Bering Industries, Inc. has released two Winchester disk subsystems for Hewlett-Packard Co. microcomputers with the HP-IB (IEEE-488) interface that feature 10M-byte removable cartridge disks and an optional 3½-in. floppy drive.

The Topsecret-1 and -3 subsystems require customized software to work with non-HP computers with an IEEE-488 interface. The disk subsystems can be plugged in and out, the vendor said. The Topsecret-1 consists of a 5¼-in. Winchester disk cartridge drive with controller and power supply. The hard disk is said to be normally formatted to 256 byte/sector for a formatted capacity of 10.4M bytes. It can sustain an average data transfer rate on the HP-IB of 174K byte/sec.

The Topsecret-2 includes an additional 3½-in. double-sided floppy disk drive in addition to the cartridge hard disk. Under HP microdiskette formats 256, 512 and 1,024 byte/sector, formatted capacities of the floppy drive are 630K, 710K and 788K bytes, respectively. Average seek time is 185 msec, and the average data transfer rate is 12K byte/sec.

The Topsecret-1 costs $3,890; the Topsecret-2 costs $4,190.

Bering Industries, 1400 Fulton Place, Fremont, Calif. 94539.

TERMINALS

■ NCR Corp. has announced a multipocket proof and encode workstation that features proof and supervisor modes for small banks.

According to the vendor, in the proof mode, the NCR 7770-1001 station performs stand-alone proof functions such as encoding, endorsing and pocket distribution. In the supervisor mode, the unit can access functions to create or modify item sets, diagnose system faults and load item sets from cassette.

Hardware and software for the 7770-1001 costs $35,595, and the unit will be available in second-quarter 1985.

NCR, Dayton, Ohio 45479.

■ Lexidata Corp. has unveiled a line of monitors and freestanding enclosures for display processors in its LEX 90, Series 8000, Series 9000, Solidview and Imageview product lines.

The monitors can be moved to different viewing angles with one hand, the vendor said. All controls are reportedly accessible on the monitor's front panel.

Cables are connected at the monitor's stationary base, and the monitors have built-in power supplies in addition to built-in connectors for peripherals.

Prices start at $4,395 for the 1,280- by 1,024-pixel model operating at 30Hz and the 640- by 512-pixel model operating at 60Hz. Costs for the 1,280- by 1,024-pixel model operating at 60Hz begin at $6,395.

The display processor monitors will be available for shipment in June 1985.

The freestanding enclosures cost $495.

Lexidata, 755 Middlesex Tpke., Billerica, Mass. 01865.

PRINTERS/PLOTTERS

■ Xerox Corp. has unwrapped a letter-quality, dot matrix printer and an extended character daisywheel printer.

The 132-col. Companion 34LQ dot matrix printer produces letter-quality printing at speeds up to 60 char./sec., the vendor said. In draft-quality mode, the 34LQ operates at speeds up to 70 char./sec. The printer has both serial and parallel interfaces and operates in both a Diablo 630 mode with extended character set capability and an Shenzhen, IBM-compatible mode. It uses fanfold and single-sheet paper. A dual bin automatic sheet feeder — the F34 — is available for an additional $662.

The Companion 34LQ printer costs $1,595.

The Diablo 630 ECS daisywheel printer has an all-purpose interface and an IBM interface, the vendor said. It has an extended character set

Continued on page 91

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Apollo unwraps Winchester disk

CHELMSFORD, Mass.— Apollo Computer, Inc. has announced an 86M-byte Winchester disk for its low-end DN550 color workstation. The disk is said to provide a greater than 60% increase in formatted data storage capacity over the currently available 50M-byte unit, the vendor said.

According to the vendor, two versions of the disk are available: the Model MSD-86M, which includes a 5¼-in. Winchester disk and controller, costs $9,500; and the Model MSD-86M-TC, which includes the disk, controller and a 45M-byte, ¼-in. cartridge tape unit, costs $11,000.

More information about the DN550 color workstation is available from Apollo Computer, 330 Billerica Road, Chelmsford, Mass. 01824.

DEVIATE from page 87

is even better suited for operation in ordinary business offices.

The EXT's debut comes less than three weeks after the introduction of IBM's System/36, a family of on-line transaction processing systems manufactured by Stratus Computer, Inc. [CW, April 1].

Because both the EXT and the System/36 are optimized for transaction processing and were announced at roughly the same time, the tendency is to regard Tandem and Stratus as direct competitors. And to an extent they are.

But for the most part, Stratus' products and the EXT are aimed at fundamentally different classes of users, Smith said.

> *The tendency is to regard Tandem and Stratus as direct competitors.*

The former is intended mainly as a low-end starter system for small applications and small businesses, he said, while the EXT is geared for the outlying locations of major accounts.

"My own feeling is that the real market for the EXT, from Tandem's point of view, is as a remote node in a large network," Smith added. Because of their sheer numbers, branch offices of big corporations loom as a highly attractive market for Tandem.

But until now, that market has remained largely off limits to the company because its existing systems are too expensive for most small nodes and require special computer rooms, which are usually available only at network hubs.

In different ways, both Tandem and Stratus are well positioned in the rapidly expanding transaction processing marketplace, Smith said. "There's definitely room for both companies."

Although the EXT lacks the expansion capacity of the rest of Tandem's systems line, it still boasts several virtues, according to another analyst.

First, the machine has "lowered the entry-level price point" for on-line transaction processing systems, according to Sandra Gant, an analyst with Info Corp., a market research firm headquartered in Cupertino, Calif. A basic EXT configuration reportedly costs a third less than an equivalent Nonstop II.

Second, because of its ability to operate in typical office conditions, the low-end Tandem system has overcome "an environmental hindrance" that has previously thwarted the company's efforts to sell to outlying corporate sites, Gant explained.

TANDEM COMPUTERS, INC.

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[redacted]	[redacted]	[redacted]	[redacted]
[redacted]			
Price per MB byte of main memory[2]	$7,500	$7,500	$7,500

1. Vendor claims
2. Available only in 256-byte increments costing $32,000.

CW Chart

DEC from page 87

hardware and the associated VAX/VMS software. It costs $355,000, the vendor said.

All three configurations will be available in September. However, the Ultrix-32 version of the stand-alone 8600 configuration will be available in November.

In addition, DEC unveiled the following three hardware options for the 8600:

■ The RB86 integrated disk and tape controller, said to provide 8600 users with a mass storage capacity of up to 1.8G bytes of disk storage and 140M bytes of tape storage. The RB86 is said to support up to four disk drives and a streaming tape unit. The option was designed to provide Vaxcluster users with storage in addition to shared Vaxcluster memory for processor-specific and stand-alone applications. The option is field installable and costs $18,400.

■ A floating-point accelerator, called the FP86, is available as an option for the newly announced specialized packaged 8600 configurations. Standard equipment on the original 8600 configurations, the FP86 provides accelerated processing for calculations using any of four VAX floating-point formats. In addition, the unit is said to accelerate integer-multiply instructions, a capability DEC claims can increase systems performance. The FP86 is available as a field-installable option or can be factory installed. It costs $20,000, the vendor said.

■ A field-installable computer interconnect adapter allows an entry-level 8600 stand-alone system to be upgraded to serve as a Vaxcluster node. The adapter consists of a circuit board and a cable and costs $21,450, the vendor said.

All three options will be available in September, the vendor said.

In making the announcement, DEC also reported that it has lowered the price of its conversion kits for VAX-11/780-to-VAX-11/785 upgrades by 15%. The kit allows users to increase systems performance by up to 70%, according to the vendor. The upgrade kit costs $75,000. It previously cost $86,000.

The Ultrix-32 operating system is a native-language implementation of the University of California at Berkeley Version 4.2 of Unix. Ultrix-32 is compatible with AT&T's Unix System V operating system and Version 2.0 of DEC's Ultrix-11 operating systems.

The Ultrix-32 operating system is said to provide a uniform programming environment for the VAX family of superminicomputers, including DEC's Microvax supermicrocomputer.

More information is available from DEC, Maynard, Mass. 01754.

GOULD from page 87

ing the data-encoding process enables Hypersearch to read a data base at 150,000 to 300,000 English words per second, with words consisting of six to seven characters, Gould spokesmen said.

A query can be constructed with up to eight search words with no performance penalty, and order, proximity and range searches can also be performed, the vendor said. Every word is encoded, so that time-consuming indexing is eliminated, the spokesmen added.

They said marketing efforts will initially focus on military and other government agencies, the news media and electronic publishing organizations, and medical and legal data bases.

The product costs $60,000 and will be available in August, according to the vendor.

Gould's Computer Systems Division is located at 6901 W. Sunrise Blvd., Fort Lauderdale, Fla. 33313.

Continued from page 90

that allows the printing of up to 400 characters.

The Diablo 630 ECS costs $2,295.

Xerox, Xerox Square 006, Rochester, N. Y. 14644.

■ Dataproducts Corp. has added four models to its Series 8000 dot-matrix printer line that are said to give IBM Personal Computers and compatibles both IBM graphics printer and IBM color graphics printer capabilities.

The models announced — the 8012, 8022, 8062 and 8072 — supersede the 8011, 8021, 8061 and 8071 models, which were introduced in September, the vendor said. These IBM-compatible printers enable users to apply software written for either the standard IBM monochrome graphics protocol or the IBM color graphics protocol.

The 8012 is an 80-col. unit that prints at 100 char./sec. in draft mode, 80 char./sec. in text mode and 20 char./sec. in near-letter-quality mode. It costs $499. The 8022 is a 132-col. version of the 8012 and costs $749.

The 8062 is a 132-col. color model that prints at 200 char./sec. in draft mode, 110 char./sec. in text mode and 35 char./sec. in near-letter-quality mode. It costs $1,599.

The 8072 is a 132-col. color model that prints at 400 char./sec. in draft mode, 300 char./sec. in text mode and 100 char./sec. in near-letter-quality mode. It costs $2,099.

Dataproducts, 6200 Canoga Ave., Woodland Hills, Calif. 91365.

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SYSTEMS & PERIPHERALS

GRAPHICS SYSTEMS

■ Auto-Trol Technology Corp. has announced two color graphics workstations and review/edit software for the company's graphics workstations and Digital Equipment Corp. VAX-based computer-aided design and manufacturing systems.

The Advanced Graphics Workstation 50 (AGW/50) is a general-purpose workstation for engineering design, analysis and drafting. It is based on the Apollo Computer, Inc. DN 550 workstation and includes 1M byte of main memory, a detachable keyboard, a 19-in. color monitor with 1,024- by 800-pixel resolution and a mouse cursor control, a 50M-byte disk, Apollo's Aegis 3.0 operating system and a choice of Auto-Trol's Series 5000 software for architecture, engineering or construction or Series 7000 software for mechanical design and manufacturing.

The company also released its AGW/55 accelerated display color graphics workstation. It is said to be suited for the creation and manipulation of large drawings and three-dimensional models. The unit is said to incorporate a bit-sliced graphics processing unit into its CPU module.

The system includes a 19-in. color monitor, 1.5M bytes of main memory and an integrated 300M-byte disk.

The AGW/50 costs $75,000, and the AGW/55 costs $94,000.

Auto-Trol also released menu-driven annotation software that runs on IBM Personal Computers, Personal Computer XTs and ATs under IBM's PC-DOS 2.1 or above operating systems. The Redliner package comes in two parts, one that is installed on the Personal Computer and one that is installed on the host. The host software — whether installed on a Digital Equipment Corp. VAX series under DEC's VMS 4.0 or a node in the AGW network under Apollo's Aegis SR 3.0 — costs $10,000, the vendor said.

The Redliner package allows Auto-Trol users to view and annotate drawings that were created on their AGWs or VAX-based systems. Annotations are stored separately from the original drawings and can be displayed as a reference file over the original at the host workstation. The Redliner terminal does not provide access to the original drawing but rather displays a copy of that original for annotation.

Auto-Trol Technology, P. O. Box 33815, 12500 N. Washington, Denver, Colo. 80233.

SPECIAL REPORT

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BOARD-LEVEL DEVICES

■ CXI, Inc. has released an IBM 3270 terminal emulation board that is said to emulate an IBM 3278 or 3279 CRT terminal. The board was designed to enable users of IBM Personal Computers, Personal Computer XTs, ATs and compatible machines to access and process 3270 mainframe computer applications.

The CXI 3278/79 Standard coaxial connection is hardware, I/O-port and command-code-compatible with IBM. It is also said to be soft-loadable and to work with any file transfer software designed to work with Digital Communications Associates, Inc.'s Irma board. With IBM's PC-DOS 2.0, the product requires 96K bytes of memory for full operation.

File transfer software for IBM's TSO or CMS host systems is an upgrade option. Another option is the 3278/79 Plus windowed software that is said to allow viewing of one host session, one personal computer session and two notepads simultaneously.

The CXI 3278/79 Standard coaxial connection costs $895, the file transfer option costs $100, and the Plus software costs $195.

CXI, 3606 W. Bayshore Road, Palo Alto, Calif. 94303.

AUXILIARY EQUIPMENT

■ Intermec Corp. has introduced its 9165 System Control Unit bar code control unit that is said to let IBM users implement Intermec bar code equipment, Ascii CRT terminals and printers without any IBM host software changes.

The 9165 unit performs the functions of an IBM 3274-51C cluster controller and allows Intermec bar code readers and printers to emulate IBM's Systems Network Architecture/Synchronous Data Link Control interactive devices. The unit features up to 16 user-definable ports that are set up to handle Intermec bar code readers, printers and CRT terminals.

Both RS-232C and RS-422 electrical interfaces are available. Use of RS-422 allows readers and printers to locate up to 4,000 feet from the 9165. The 9165 supports data rates of up to 19.2K bit/sec.

The cost for a single unit is $9,800.

Intermec, P. O. Box 360002, 4405 Russell Road, Lynnwood, Wash. 98046.

"The computer just did our budget. We can't afford the computer."

COMPUTER INDUSTRY

Stratus chief downplays effect of IBM resale deal

By Peter Schaffer
Staff Writer

MARLBORO, Mass. — IBM's decision to resell fault-tolerant computers made by Stratus Computer, Inc. may have been a unique event in the industry, but it seems few changes for Stratus, according to the company's president.

"I don't view [the IBM contract] as anything that's going to change the character of Stratus or make us a different company," William Foster, president of the five-year-old company, said in a recent interview here.

IBM will not squeeze Stratus out of large IBM-dominated DP shops because that has never been the company's primary market, according to Foster. "We've sold a lot in large companies, but generally [as] a division, a satellite of the MIS department that has a specialized transaction processing project," he said.

But, he added, IBM has the opportunity and resources to forge a new market for fault-tolerant equipment.

Despite skepticism from some observers about IBM's ability to smooth away revenue from its purchases after building them up on huge orders from Big Blue, Foster said there is little likelihood that Stratus will be left stranded on the heels of a year or two from now by IBM releasing a fault-tolerant box. Disclaiming any knowledge of IBM's internal plans, Foster said, "I think it is unlikely that IBM would sell this product into [its] customers and then drop support of it. ... This isn't like buying a disk drive from somebody, then switching vendors; this is a complete computer system that [IBM] customers are going to develop applications for and become very dependent on."

See STRATUS page 98

Workweek cut at Motorola wins state OK

By Kathleen Burton
City Hall Correspondent

PHOENIX — Motorola, Inc. received state approval to implement a work-sharing program that could idle the company's 14,000-member semiconductor work force in Arizona from half-a-day to two days a week, Motorola officials said.

Motorola also reduced staff during the last five months in Arizona and in Austin, Texas, by almost 1,000 workers, mostly through attrition and the elimination of 150 contractor positions.

According to Ken Phillips, Motorola's director of communications, the reduced workweek and staff were in response to the prolonged softness in the semiconductor industry, which has plagued semiconductor makers since the second half of 1984.

First-quarter earnings figures released April 12 revealed that Motorola's semiconductor sales were down 6% from the same period a year ago and that new semiconductor orders were down 58%. First-quarter profits were $41 million, down from $78 million a year ago. Company officials said the slowdown was due to the decline in semiconductor profits.

Under Arizona's state-run work-sharing program, which was designed to help manufacturers avoid layoffs, eligible Motorola employees will receive unemployment benefits of up to $23/day to help offset lost wages, Phillips said. Employees could also use accrued vacation time to make up some of the lost pay, he added.

The work-sharing program began at Motorola's Chandler, Ariz., operation last month, Phillips said.

Implementation will depend on the individual fiscal requirements of Motorola's various operating units and will be applied at the discretion of each Motorola unit manager, Phillips said. The plan will be used by most, but not necessarily all, of Motorola's Arizona operations, he said.

See WORK page 98

■ Digital Research said it had made two layoffs in the past month/98

■ Arthur D. Little Inc. moved to spin off into a separate company the service divisions of Datapoint Corp. and Motorola Data Services Corp., both of which it previously bludgeoned into adopting liquidation strategies/98

■ A hostile takeover attempt appeared to be developing last week when Informatics General announced it had rejected an offer by Sterling Software, and Sterling countered that it would pursue the effort and had already acquired substantial Informatics stock/97

Ashton-Tate to buy Forefront

CULVER CITY, Calif. — Ashton-Tate recently announced an agreement in principle to acquire Forefront Corp., the Sunnyvale, Calif.-based developer of the Framework software program marketed by Ashton-Tate.

The announcement came less than one week after Lotus Development Corp.'s announcement of its intention to acquire the assets of Visicalc developer Software Arts, Inc. [CW, April 16]. Various microcomputer software analysts have been predicting a consolidation in the crowded ranks of micro software developers.

Ashton-Tate said Forefront will continue to operate in Sunnyvale as part of Ashton-Tate's research and development activities. Forefront has 17 employees and is headed by company cofounders Robert Carr and Marty Mesmer.

The relationship between the two companies dates back to August 1983, when Ashton-Tate funded Forefront's work on Framework and acquired a minority interest in the company.

Edward M. Esber Jr., president and chief executive officer of Ashton-Tate, said the acquisition is part of the company's strategy "to expand our developmental strength and capture the best and the brightest of the industry's technical resources."

NCR chief foresees slow year in wake of first-quarter dip

DAYTON, Ohio — NCR Corp. reported last week that first-quarter profits declined to $43.5 million, down 4% from $45.5 million a year earlier. Earnings per share were 45 cents, which equaled the year-earlier figure due to stock repurchase programs in 1984.

NCR reported that revenue declined 2% to $942.7 million, down from $961.4 million in the first quarter of 1984.

Charles E. Exley Jr., chairman and president of NCR, said, "While we remain optimistic about long-run prospects, first-quarter results suggest that 1985 will be a difficult year in which to produce significant growth in revenue and earnings." He added that several products to be introduced this year provide "the prospect of renewed growth in the future."

NCR said that first-quarter results were "severely depressed" by the strength of the U.S. dollar in foreign currency markets.

Tough times for micro software firms

INDUSTRY INSIGHT
Eric Berdon
CW Senior Editor

There's a fencing term that translates from the French as "the two-widows lunge."

That's a good description of the lawsuit between micro software pioneers Software Arts, Inc. and Visicorp that killed both companies.

Last fall Visicorp was folded into Paladin Software Corp. This month Software Arts announced plans to sell off its product line and fade quietly into the night.

While disappearances are common in the software industry, it's a shame to see Software Arts and Visicorp go, because they both kept coming out with unusual packages.

In the case of Software Arts, the revolutionary Visicalc was followed by TKSolver — another genuinely innovative and useful package, which labored under an awkward name and uninspired marketing. Spotlight, a capable desktop organizer, never emerged from the shadow of Borland International's Sidekick, which was much more aggressively priced and pushed.

These, and perhaps the upcoming Visicalc package for the Apple Computer, Inc. Macintosh, were sold down the river — literally, a few miles down the Charles River — to Lotus Development Corp.

Lotus may provide a comfortable home for these and, more important, future products from the Software Arts founders if it can minimize the marketer vs. developer battles that doomed Software Arts and Visicorp.

The issue will be just as critical for Lotus, which will depend on alliances with software stars and start-ups for much of its future growth, as it was for the two vanished firms.

While the Visicorp-Software Arts debacle was unusual, other microcomputer software firms continue to walk a tightrope. "I know of only four micro software companies that aren't for sale,"

See RISE page 98

WHEN YOU WARE THESE HOT NUMBERS B[illegible] SUCCESS IS AUTOMATIC

AUTOMATE YOUR PRODUCTION WORKFLOW [illegible]
AND YOUR DATA CENTER ALMOST RUNS ITSE[illegible]

Digital Research trims staff

MONTEREY, Calif. — Digital Research, Inc. has made two staff reductions totaling 45 people during the past month, according to the company.

Acknowledging that business from many of its OEM customers, the microcomputer software vendor decided in March to shut down its manufacturing operations, giving a three-month notice to 18 employees, a spokeswoman said.

On April 1, Digital Research laid off another 24 people. The cuts primarily hit employees involved with language products. Roughly 450 people currently work at the firm.

Digital Research recently began delivering its first Graphics Environment Manager applications. The Concurrent DOS and Concurrent 68000 operating systems are scheduled for first delivery to OEMs in May and June, respectively.

Merger spurs Priam layoff

SAN JOSE, Calif. — Priam Corp. will trim its work force of 1,150 by 100 employees, the company announced April 9.

According to the maker of Winchester disk drives and other storage systems, the layoffs were primarily because of consolidation measures after Priam's Feb. 26 merger with Vertex Peripherals of San Jose, Calif. A Priam spokesman also cited the current slowdown in the computer systems industry.

The company also said it has scrapped plans to produce previously announced 11-MB-byte and 18-MB-byte 5¼-in. disk drives. According to a Priam spokesman, elements of the technology developed for the drives would be incorporated in future 5¼-in. products.

Priam currently manufactures 14-in., 8-in. and 5¼-in. drives ranging in capacity from 30 MB to 600 MB bytes.

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RAMIS II... THE LEADER BY DESIGN

CORPORATE REVIEW

Datapoint, Mohawk plan service division merger

SAN ANTONIO — Datapoint Corp., based here, and Mohawk Data Sciences Corp. of Parsippany, N.J., recently announced an agreement to combine the service divisions of the two companies into a separate company.

Both Datapoint and Mohawk were liquidation targets of New York-based arbitrageur Asher B. Edelman, who acquired substantial holdings in the companies and then convinced them to appoint him to their boards of directors and accept his proposals for selling off the assets of the companies.

Edelman was vice-chairman of Mohawk, but relinquished that title when he was appointed chairman of Datapoint last month (CW, March 25). He remains a member of both boards.

Datapoint said that, pending a favorable tax ruling, it intends to spin off its service organization to become a separate public corporation owned by Datapoint shareholders. Edelman will probably be named chairman of that company, according to Datapoint spokesman Jack Miles.

Following its formation, the new company will acquire the service operations of Mohawk for an undisclosed price financed either publicly or privately, Miles said.

The new company will be headquartered in San Antonio and will include 2,600 employees currently employed in Datapoint's service organization, and 950 employed in Mohawk's service organization. Miles said the new company will probably increase its work force fairly quickly following completion of the deal.

Datapoint also announced recently that Richard A. Rohn had rejoined the company and was named senior vice-president for marketing and sales.

Rohn was a sales and marketing executive with Datapoint from 1970 to 1980 and for the past two years was senior vice-president and a member of the board of directors with Vector Graphic, Inc.

IBM to sell Milspec

NEW YORK — Complying with its legal obligations, IBM has agreed to sell the Milspec Computer Division of Rolm Corp. to Loral Corp. for $100 million in cash.

The U.S. Department of Justice had ordered the divestiture in its 1984 approval of IBM's acquisition of Rolm for $1.26 billion. The Santa Clara, Calif.-based Milspec division is the market-share leader in the military applications computer business with sales of $85.9 million in 1984. Milspec accounted for approximately 15% of Rolm's revenue for the year.

The sale to Loral, pending Justice Department approval, is expected to be completed next month. The government had ordered IBM to sell the division by May 19.

The Milspec acquisition is expected to broaden the military-related sales of New York-based Loral Corp. Loral acquired Hycor, Inc., a manufacturer of radar and other electronic defense systems, on March 11.

Loral primarily manufactures electronic systems and components for military applications. The firm posted approximately $500 million in revenue for the year ended March 31, and expects $100 million in sales from Milspec in the current year.

IBM selected Loral from among several bidders, including Data General Corp. DG currently licenses the technology of its Eclipse series minicomputers for Milspec computers. "Their computers are based on Eclipse architecture and ruggedized for military use," said DG spokesman Ken Donahue.

Donahue did not confirm that Loral outbid DG for Milspec. "IBM was not bound to [illegible] the highest bidder."

WHAT WE BELIEVE

Informatics rejects Sterling's 'inadequate' takeover bid

[illegible]
Staff

WOODLAND HILLS, Calif. — Informatics General Corp. announced last week it had rejected an unsolicited takeover offer made by Rockville-based Sterling Software, Inc. Sterling spokesman said the firm would continue to seek to acquire Informatics.

Informatics also reported it had formed a committee to explore ways of maximizing shareholder value. Ben Ezzell, chairman of Informatics, said his company is hopeful that negotiations will continue. Sterling has completed a bid of Informatics common stock since March 13, Ezzell said.

Informatics reported that Sterling had offered $30 per share, or about $120 million. Informatics posted revenues of $183 million and profits of $8 million in 1984.

Sterling's Sweet, chairman and president of Informatics, said that company's board of directors rejected the offer as inadequate and not in the best interests of the shareholders. The Sterling takeover proposal was conditioned upon the satisfactory completion of due diligence and Sterling's ability to secure financing."

Ezzell said, however, that Sterling had already lined up financing for the acquisition and had retained the investment firm of Drexel Burnham Lambert, Inc. to manage the effort. He also said Sterling had "at an earlier time invited Informatics to demonstrate that a price of more than $35 per share was justifiable."

Informatics reported that it formed a three-member committee to "explore various alternatives to maximize shareholder values" and will be advised on such matters by its investment banker, Smith Barney, Harris Upham & Co. Informatics spokeswoman Carol Hays said that the committee was established to explore options, and "we are not saying that we are now for sale."

An analyst of mergers and acquisitions in the software and services industry, George Grodski of Fort Lee, N.J.-based Broadview Associates, Inc., said that with Informatics holding about $50 million in cash assets, the purchase offer of $120 million actually represents an $80 million bid, which he called attractive.

Although Sterling's revenues for fiscal 1984 was $18.7 million with profits of $1.1 million, Grodski said he did not think Sterling's chairman, Sam Wyly, would have any trouble raising the financing for the deal.

Regarding the likelihood of Sterling proceeding with a hostile offer, Grodski noted, "There never has been a concluded unfriendly (takeover) in this industry to the best of our knowledge."

He pointed out that software companies are not asset rich and that because personnel of such companies are their most valuable assets, "the goodwill of management is very important in this industry."

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STC: No sale

DENVER — Hathaway Corp. announced last week the termination of discussions for the purchase of Storage Technology Corp.'s majority interest in Global-Ultimacy Systems, Inc.

Hathaway said the companies were unable to agree on terms other than price.

STC is presently involved in Chapter 11 proceedings under the Federal Bankruptcy Act.

[illegible]
for THE [illegible]
For more information
Contact [illegible]
[illegible]
[illegible]
[illegible]

STRATUS from page 93

The IBM connection is also likely to spur third-party software developers to write applications packages for the IBM-labeled Stratus architecture, Foster said. "We've seen some of that already; I think some of the third-party companies might see the Stratus architecture becoming the standard fault-tolerant architecture," he said.

After building up to revenue of $42.1 million in 1984, based mainly on end-user sales — except for an OEM deal with Ing. C. Olivetti & Co. that provided 18% of Stratus' total 1984 sales and most of its international sales — Stratus has inked OEM deals with Honeywell, Inc. and IBM and this month with the Systems Development Corp. subsidiary of Burroughs Corp.

The addition of "alternative sales channels" will enable Stratus to devote more resources to its own end-user sales, Foster said. As far as competition from its OEM partners and particularly IBM, Foster said the burgeoning fault-tolerant market is big enough for many players.

> **'[Fault-tolerance will] become a standard feature in all multiuser systems.'**
>
> — William Foster, Stratus Computer, Inc.

Stratus' own sales force was immediately supportive of the IBM deal, but a minority was initially nervous about the prospect of competing with Big Blue, Foster said.

The agreement, he added, "has given Stratus a large amount of credibility; it certainly has gotten us a lot of attention .... people feel .... the company is going to be here 15 years from now."

Foster said he believes the fault-tolerant market will be large enough to support many companies, even though Stratus and industry leader Tandem Computers, Inc. are the only ones to have significant market share to date.

Established vendors of general-purpose computers have been very slow developing fault-tolerant features, but Foster said fault-tolerance will at some point "become a standard feature in all multiuser systems."

The IBM agreement, he said, will increase demand for fault-tolerant systems, even those from Stratus' chief competitor, Tandem. "If IBM has decided to do a very unusual deal like this, [it] obviously views the market as a very important market," Foster said.

FADE from page 93

said Carl Gritzmacher, Ashton-Tate's sales vice-president, recently.

"One of the biggest concerns is that most street prices keep sliding. You can hear a lot of good reasons why this shouldn't happen, but Borland's success with under-$100 packages flatly contradicts them.

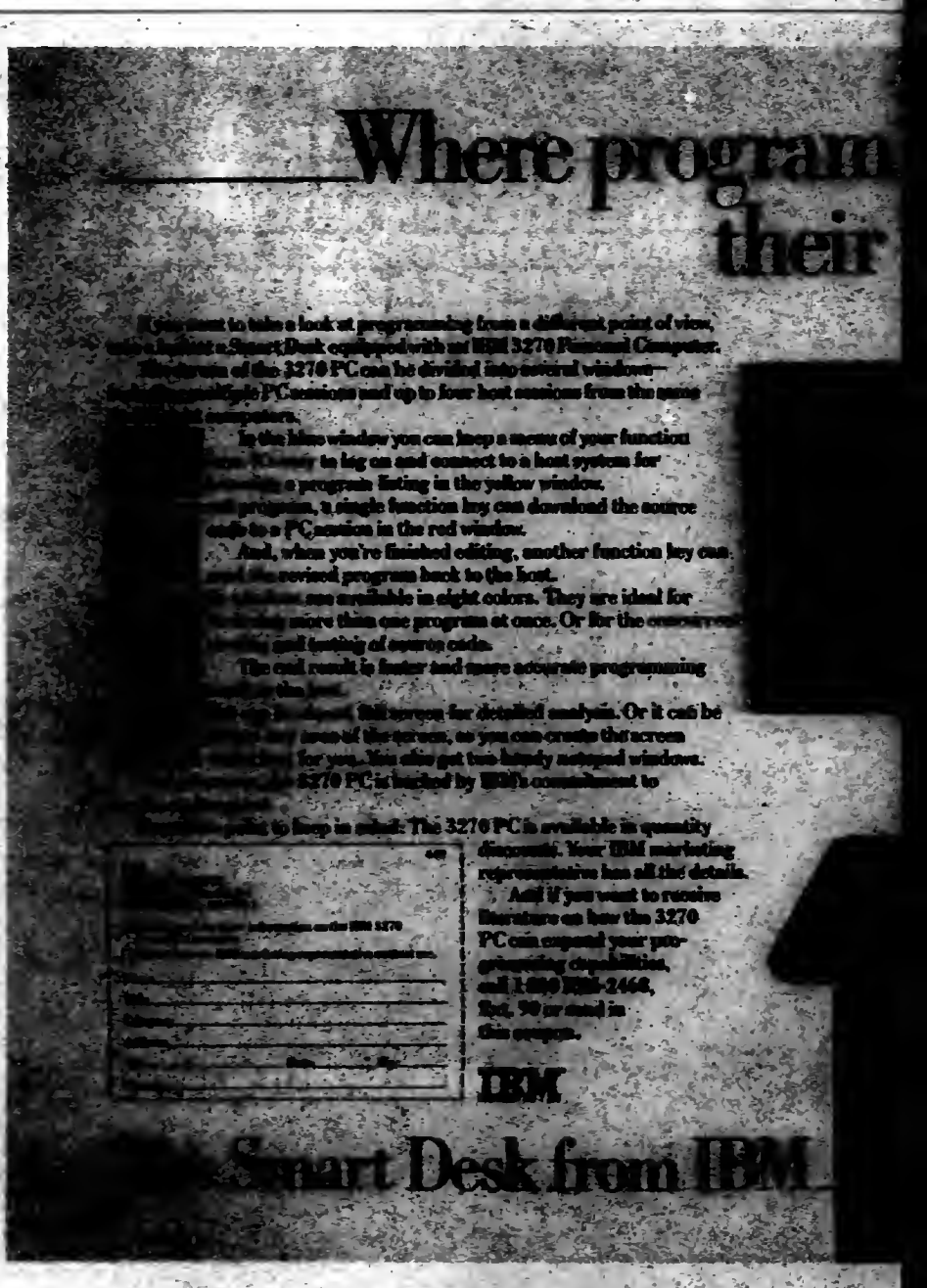
The good news in the software shakeout for customers is the potential for fire sale software buys. The bad news is that the choices may be narrowing. Even established firms face an uphill battle because "the distribution channels are so screwed up," noted Tony Morris, president of Morris Decision Systems, a New York reseller. Innovative software may not make it because the dealers that showcased new products can't compete against the discounts available from volume distributors, he explained.

WORK from page 93

but it has not yet been determined which operations will continue to operate at full capacity. Motorola's discrete Texas semiconductor products are still in full production, however, and the program might not be implemented as much in these areas, he added.

The program now in effect is the same one Motorola used in 1982 to reduce expenses during that year's industry slowdown. Phillips said Arizona's work-sharing program was used sporadically throughout 1982 and, at its peak, affected 9,000 of Motorola's then 13,000-member Arizona work force, saving the company $1.5 million in 1982's fourth quarter.

Phillips said Motorola recently applied for a similar work-sharing program in Texas, but the proposal is still pending in the state legislature.



COMPUTER INDUSTRY

EXECUTIVE CHANGES

Gale Carr has been appointed to the post of president at Rising Star Industries. She has been with the company since 1982 as vice-president and chief financial officer.

■

Vernon Francom has been appointed president and chief executive officer of ANA Tech Corp. Francom was president and chief executive officer of Data Com Systems, Inc. before joining ANA Tech.

■

Bobbie White has been named vice-president and general manager of the Systems Division of Applied Digital Data Systems, Inc.

■

Vaemond H. Crane has been named president and chief executive officer of Mips Computer Systems, Inc. Previously, Crane was president and chief operating officer of Computer Consoles, Inc.

■

AT&T Communications has announced the appointment of Frank Blount, executive vice-president, network organization. Blount will head the company's nationwide network organization replacing Robert Klebert, who is retiring as president and chief operating officer after 44 years of service. Other executive changes were announced as follows: Robert Rank, vice-president, operator services; Richard Jacobsen, vice-president, international; John Healy, vice-president, network services; John Blanchard, vice-president, custom services; and Kenneth Garrett, vice-president, network.

■

Syscon Corp. has announced that Jose J. Thiele has been named chairman and chief executive officer and has also announced the appointment of Edwin H. Trisch to president and chief operating officer.

■

Ramesh K. Mehta has been appointed president and chief operating officer at Inspiration Systems, Inc. Mehta was chairman and chief executive officer of American Business Systems, Inc. for the past 2½ years.

■

Michael Kappel has been elected vice-president of Modiflex Systems Corp.

■

Amdahl Corp. has announced the appointment of Bob M. Ghem to the position of vice-president, marketing, of the company's communications systems division based in Marina del Rey, Calif.

■

Paul R. Hessinger has been promoted to the position of vice-president of research and technology at Computer Task Group, Inc.

■

Dwayne L. McAfee has been elected corporate vice-president of Recognition Equipment, Inc.

■

Sperry Corp.'s Information Systems Group has announced the promotion of David C. Brandtael to the newly created post of vice-president for product management and marketing in the microcomputer products division.

■

Storage Technology Corp. has promoted Walter R. Meyers to corporate vice-president and general manager of the company's tape division.

■

Robert D. Bowman has been appointed senior vice-president of development for Xerox Computer Services.

■

William O. Meharen, deputy director of the National Security Agency's research and engineering organization, has joined Ampex Corp. as corporate vice-president of engineering, a newly created position. Michael Feltz has been appointed senior scientist for Ampex, also a newly created post.

■

Software Design Associates, Inc. has announced the following appointments: Michael Grunwin will assume the position of regional vice-president for the New York and Long Island branch office locations. Marty Arenow will be taking on the responsibilities of regional vice-president for the Chicago, Philadelphia, New Jersey, Cincinnati and Connecticut branches.

■

Corvus Systems, Inc. has announced that Roy A. White has joined the firm as chief operating officer.

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COMPUTERWORLD

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MERGERS AND ACQUISITIONS

Information Solutions, Inc. (ISI) announced it has completed the purchase of 45% of Software Development and Sales Co. (SDSC), a Colorado partnership.

ISI's investment in SDSC totaled $1.56 million in cash, preferred stock and common stock. As part of the agreement, ISI is granted a perpetual right to renew its marketing rights with SDSC.

■

Computer Task Group, Inc., Buffalo, N.Y., announced it has acquired Berger, Verney & Co., a professional computer services firm headquartered in Houston. Terms of the acquisition were not available.

■

First Australia Telecommunications, Inc. and Systematics, Inc., Amarillo, Texas, announced they have completed the sale of Western Data Centers, Inc., formerly a wholly owned subsidiary of First Australia, to Systematics. The purchase price was approximately $3.3 million.

■

Interactive Data Corp., Waltham, Mass., has purchased Teknet Systems, Inc. from Western Union Corp. Interactive Data will merge Teknet with its subsidiary, Interactive Data Services, Inc. Terms of the sale were not available.

■

Automatic Data Processing, Inc., Roseland, N.J., has acquired Commodity Communications Corp. (Canada) Ltd. (CCC), for an undisclosed amount of cash plus contingent payments based on future business results.

CCC, headquartered in Ontario, provides services for dissemination of real-time futures quotations to more than 100 Canadian companies.

■

Software Distribution Services (SDS), Buffalo, N.Y., has acquired a substantial interest in one of Canada's largest software distribution firms, Aviva Software Corp. Aviva will be operated as a subsidiary of Winsorp, the parent company of SDS. The purchase agreement gives SDS the option to purchase the remaining shares of the Canadian firm.

■

Intergraph Corp., Huntsville, Ala., has reached an agreement in principle to acquire The Rand Group, Inc. Under the terms of the acquisition, The Rand Group will become a wholly owned subsidiary of Intergraph Corp. and will be responsible for the development of finite element-based analysis and design software for Intergraph computer-aided engineering and design system. No financial details of the agreement were released.

■

Northern Data Systems, Inc. announced it has reached agreements in principle to acquire three computer-related companies: Lehigh Data Systems, Pasadena, Inc. and Omni, Inc.

The products and services of these three companies are complementary to those of Northern Data Systems, a supplier of turnkey computer systems and a developer of proprietary vertical software. Terms of the acquisition were not disclosed.

NICKELS AND DIMES

Symbolics, Inc. reported revenue for the second quarter ended Dec. 30 of $15.7 million, a 76% increase from $8.9 million for the same period in the prior year. Profits were $815,000, or 4 cents per share, a 308% increase from $200,000, or 2 cents per share, for the comparable period last year.

■

Comshare, Inc. announced results for the second quarter of fiscal 1985 and said it is planning to sell its Chicago-based Computer Research Co. subsidiary. Comshare has accordingly adjusted its investment to Computer Research to estimated net realizable value, resulting in a book loss of $3.6 million and a reduction of $3.8 million to goodwill investment.

Revenue for the quarter, exclusive of discontinued operations, was $15.5 million, compared with $16 million one year earlier. Loss from continuing operations was $1.4 million, or 42 cents per share, compared with a profit of $166,300, or 4 cents per share, in the like period one year earlier.

■

Protocol Computers, Inc. announced a net loss for the first three months of fiscal year 1985 of $455,000, or 8 cents per share, compared with a profit of $255,000, or 5 cents per share, in the like period one year ago. Revenue was $2.6 million, compared with $3.4 million for the same period one year earlier.

■

Computer Memories, Inc. reported revenue for the third quarter of fiscal year 1985 of $20.1 million, compared with $12.6 million in the like period one year earlier.

The company reported a net loss of $3.8 million, or 80 cents per share, compared with a net loss of $130,000, or 1 cent per share, to the year-earlier period.

■

Masstor Systems Corp. announced fourth-quarter revenue of $9 million for the period ending Dec. 31, an increase of 21% over revenue of $7.4 million in the same period a year ago. Operating losses were $2.1 million, or 21 cents per share, down from $3.2 million, or 35 cents per share, in operating losses to the like quarter one year earlier.

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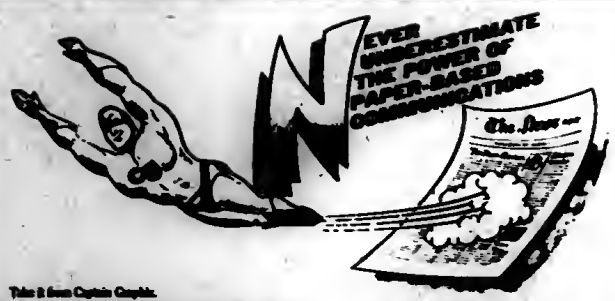

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- Develop and maintain language tools and utilities
- Consult with users to isolate and troubleshoot problems
- Enhance and maintain operating systems (UNIX™, VMS, MS-DOS and Domain)
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- ASM, "C", UNIX™ (4.2) experience
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As an IMS Systems Programmer at Federal Express, you will be involved in problem resolution, performance and tuning, and systems maintenance. Qualified individuals must have at least one year of IMS Systems Programming experience which includes knowledge of IMS internals and externals, Assembler language, SMP, and MVS operating systems.

Bring your special talents to Federal Express where you will find excellent salaries, extensive benefits, and a dynamic atmosphere of professional interaction and high productivity. Send your resume including salary requirements in confidence to: FEDERAL EXPRESS CORPORATION, Dept. 3411-191, P.O.Box 727, Memphis, TN 38194. An Equal Opportunity Employer, M/F.

PROJECT MANAGER

GOLD CIRCLE is a $600 million division of Federated Department Stores with 50 retail stores in four states. We are currently seeking a results-oriented professional interested in joining one of the most technologically advanced IBM shops in the Midwest. Our growth and expansion within Information Services will provide the successful candidate with the opportunity to work in a stimulating development-oriented environment. Our present environment consists of an IBM 3081 mainframe with an MVS-XA operating system.

The successful candidate will manage the development of Merchandise Inventory Systems. Particular emphasis will be placed on a Replenishment/Distribution project during 1985 and throughout 1986.

Requirements include excellent oral and written communication skills and the ability to effectively manage an ambitious group of people while coordinating the development of several major systems. Experience in a large IBM-OS environment will be necessary as well as 2-3 years experience of a project leader level. Exposure to life cycle development methodologies, 1-2 years experience with IMS or DL-1 and experience with retail or manufacturing applications is needed. Knowledge of ADF, ROSCOE, Intrieve and CICS would be a plus.

If you are interested in an outstanding opportunity along with our progressive compensation program that includes an excellent relocation package to our headquarters in Columbus, Ohio, our state's largest city, forward your resume and salary history to: Bea Crossman, Executive Recruiter, GOLD CIRCLE STORES, P.O. Box 68, Worthington, OH 43085.

Gold Circle

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You will be responsible for the design, implementation, and performance optimization of a large, multi-node SNA Data Network. You will evaluate and perform technical analysis of a wide variety of high speed transmission systems and data networking products and services for application to our environment. You will manage highly complex engineering and implementation projects. Candidates should possess a minimum of 5 years experience in planning, design, and implementation of optimized network solutions in an IBM/SNA environment.

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DIRECTOR OF COMPUTER SYSTEMS

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Colorado School Of Mines

Director Computing Services

Responsibilities: The Director has general responsibility for managing the central computing facility. The computing center includes the computer operations, systems and programming staff and provides general support to the administrative and academic computing community. The computing center is also responsible for maintaining a variety of personal computer and terminal laboratories across campus. Present host computers are DEC VAX 8600, and Ultrix VS computer systems. The Director is expected to work effectively with administrators and faculty and manage professional staff and part time student employees. In addition, the Director is expected to be a recognized member of the campus community with responsibility for planning of computing needs, including planning computing and data communications networks.

Qualifications: Candidate must have a minimum of five years management experience in an academic or research computing environment and sufficient technical knowledge to be able to make informed decisions about the acquisition of hardware and software. Applicant must demonstrate the ability to work with faculty and staff at varying levels of sophistication and ability to assist them in their computing needs. In addition, the Director is expected to be involved in teaching and to supervise graduate students. Applicants must have appropriate degree or equivalent experience. Salary and benefits rank in accordance with qualifications and experience.

Colorado School Of Mines is a state supported institution and offers degrees through the doctoral level in Mineral Engineering and Science. Total enrollment is 2,700 students. The campus is located in Golden, 15 miles west of Denver.

Application: Applicants should submit a letter of application, a current resume, and the names of three references no later than May 17, 1985 to: Dr. Donald Langmuir, Dean of The Colorado School, Colorado School Of Mines, Golden, CO 80401.

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Data Processing

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Saudi Arabia

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Submit resume and salary requirements to:

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SYSTEMS PROGRAMMER II

Full-Time Professional Position
Beautiful Fairbanks, Alaska

The position is currently a Systems Programmer in the ADP Unit and reports directly to the Director. Responsibilities include support and tuning of [illegible] systems, and [illegible] ADP, CICS, [illegible] and other products on a VAX 8600 and [illegible] VAX 11/780 computers. Will also assist in the [illegible] of the University's wide-area and local area data communications network. As a member of the ADP staff, will participate in [illegible] projects, work in cooperative [illegible] with other members of the staff, and [illegible] to maintain, adapt and develop [illegible] systems. The University of Alaska offers a competitive salary and an excellent benefits package.

Applications [illegible] with resumes and at least three professional references, must be received no later than April 30, 1985 at 5:00 p.m. AST.

Personnel Office of Human Resources Depot

University of Alaska

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N.C. Location

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Personnel Department

East Carolina University

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ECU

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Systems Programmers

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We offer competitive salaries plus generous company-paid benefits including relocation assistance. Interested candidates should send a resume including salary history in complete confidence, to: Carol Bailey, Senior Personnel Representative, The Gillette Company, Dept. CW, 57th Floor, Prudential Tower Building, Boston, MA 02199.

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Systems Engineers — Microprocessors. Growing Scottsdale firm seeks Senior Technical Software Engineers to lead development and implementation of new microprocessor systems. Thorough knowledge (five or more years) of systems development using high level languages and Assembler on microprocessors sought. Some hardware design or interface experience preferred. B.S.E.E., M.S.E.E. degree highly preferred. Some international travel. To $54,000.

Programmer — RPG II. Growing Arizona organization seeks a professional with solid RPG programming skills to assist in financial and inventory development. Broad business applications exposure preferred. To $25,000.

Minicomputer Specialists. Phoenix-based communications firm has multiple projects for mini/micro Programmers and Software Engineers to develop state-of-the-art communications based systems on minicomputers in front-end vehicle to handle line traffic and support multipurpose communications network. B.S., M.S. degree in C.S. or E.E. sought. To $40,000.

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Systems Analyst — Systems 38. Growing distribution firm in southern Arizona community provides a ground-floor opportunity to build a staff and develop the data processing function. Proven leadership and technical skills including RPG III desired. To $31,000.

Systems Analyst — Distribution or Financial. Major division of a Fortune 500 corporation seeks an experienced Analyst with three or more years experience in manufacturing, distribution and/or financial information systems. Large systems environments IMS DB/DC exposure preferred. Arizona location. To $38,000.

Series 1 Communications Systems Programmer. Headquarters subsidiary of a prestigious national firm, is expanding their communications switching and front-end processing group in Phoenix. Experience in IBM Series 1 using Assembler and BDX for real-time communications switching and interface to SNA networks sought. Will be heavily involved with systems internals, protocol conversion, and SNA implementation. To $42,000.

Scientific Programmer — Growing Firm. New Mexico firm seeks aggressive, technically-oriented individual with expertise in mathematical analysis and simulations. B.S. degree. DEC, VAX and FORTRAN experience sought. To $30,000; M.S. degree to $40,000; PhD to $48,000.

Programmer/Analyst — CICS. Well-known, expanding firm with upgrade systems in 1985. COBOL and Macro level CICS experience desired. To $35,000.

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COLORADO

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Software Engineers — Learn Artificial Intelligence. Prestigious Denver Firm that is developing new applications using artificial intelligence technologies seeks several bright, aggressive individuals with two years experience in structured languages (C, PASCAL, ADA) on mini and micro computers. To $35,000.

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Programmer/Analyst — Formal Training. International computer hardware manufacturer has multiple openings for Programmer/Analysts with a minimum of two years of COBOL experience on IBM/OS environment. This Fortune 500 company has an excellent internal training program. To $35,000.

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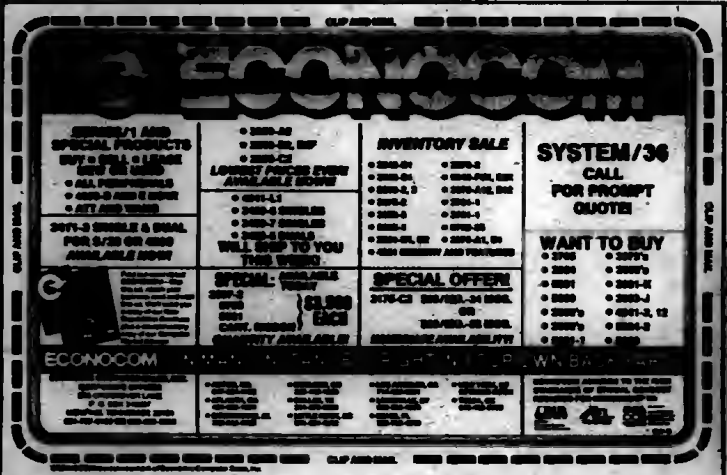

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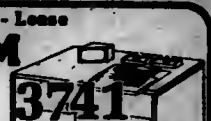

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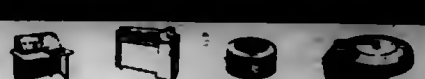
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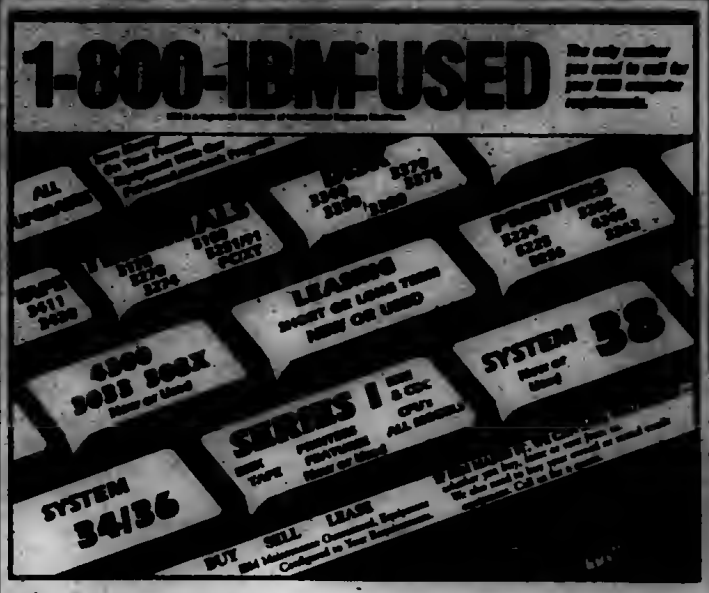

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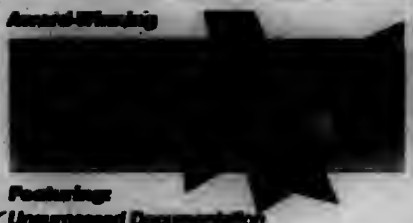

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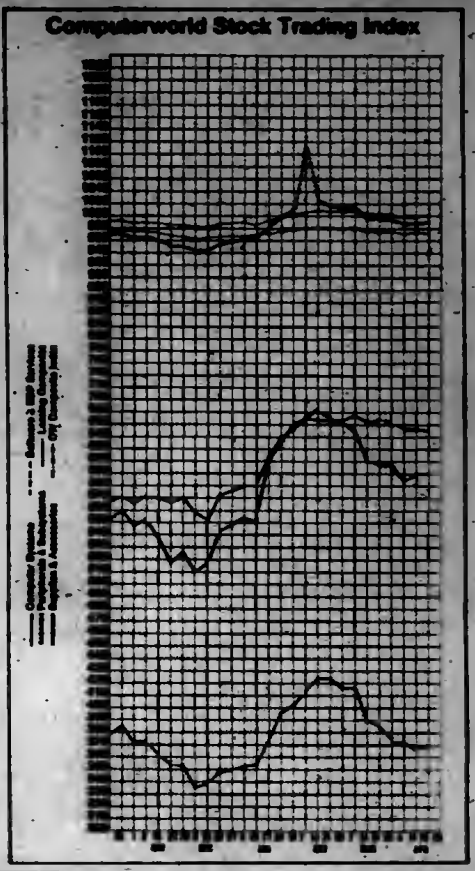

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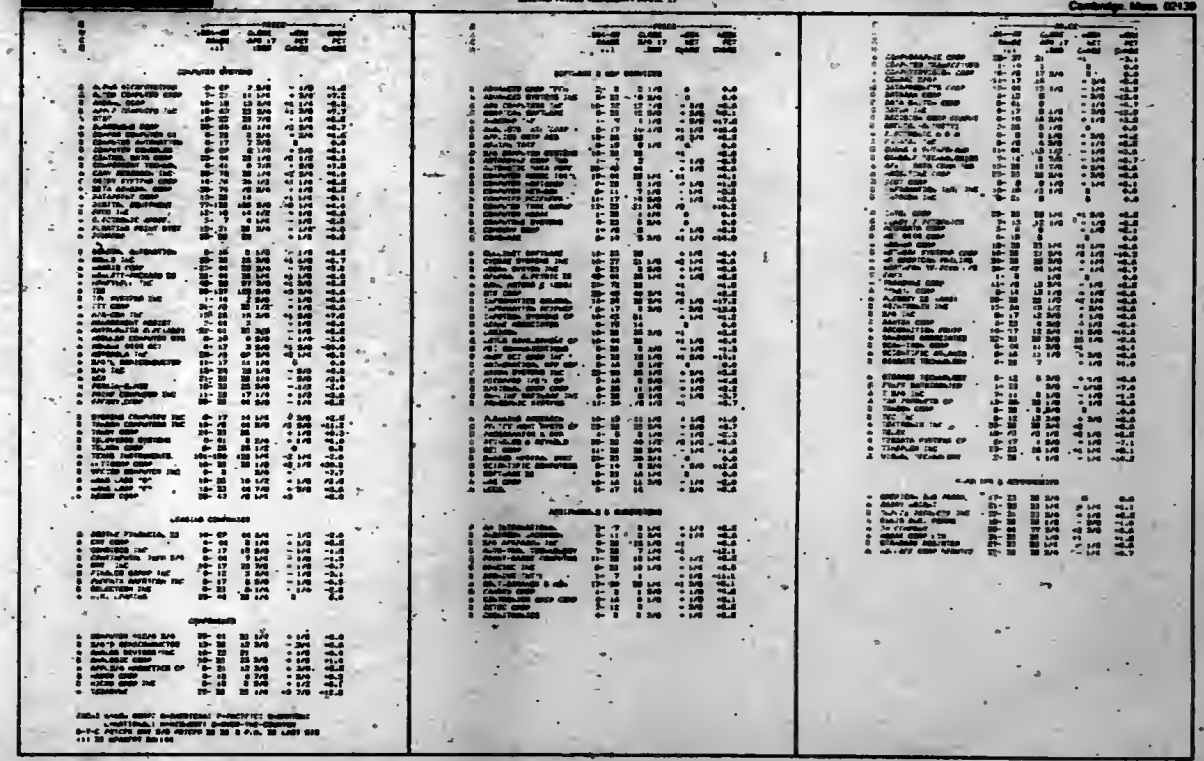

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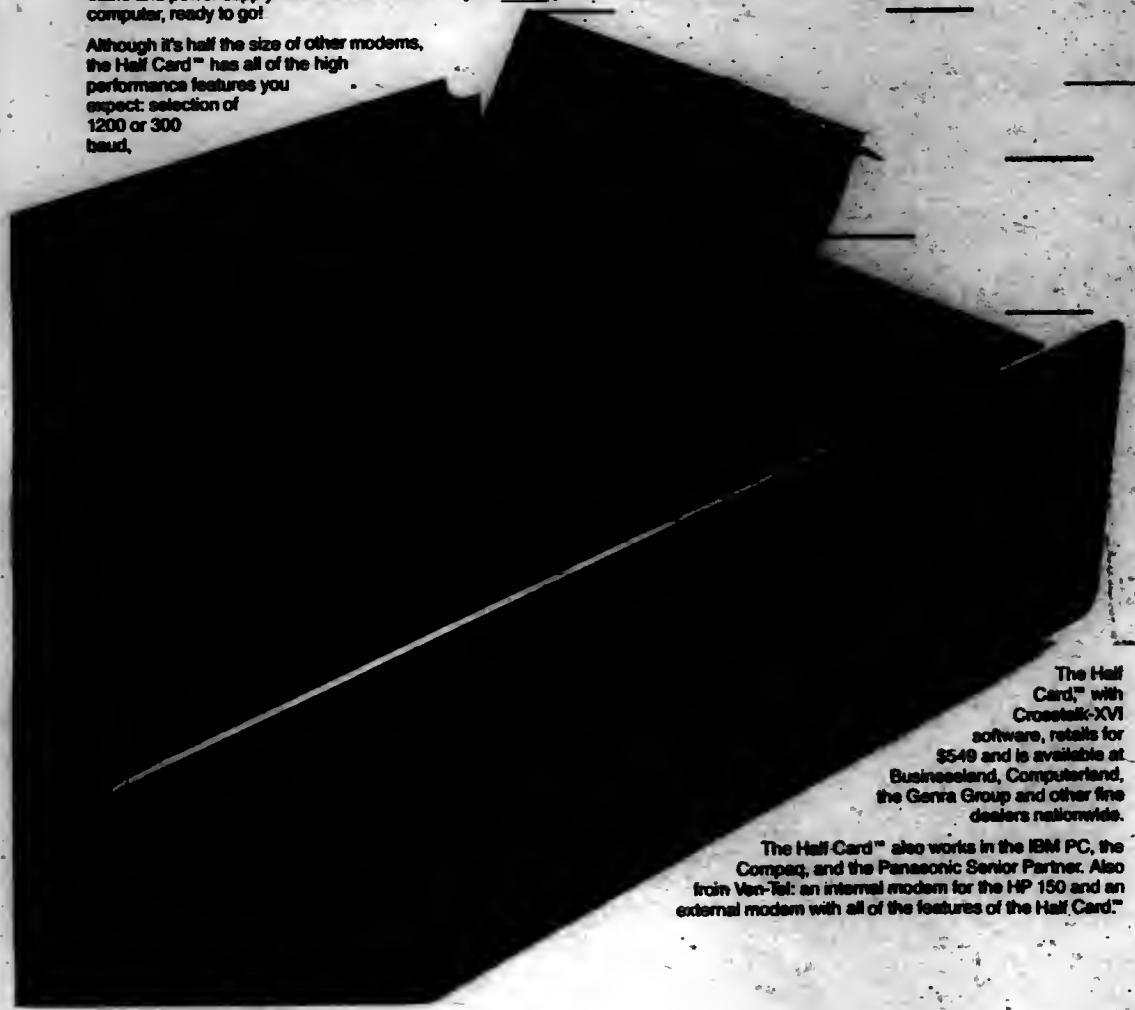

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